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Performance Motivation: Tests of an Integrated Model

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PERFORMANCE MOTIVATION:
TESTS OF AN INTEGRATED MODEL

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Performance is usually defined as the level of achievement on some dimension during some period of time (Vroom, 1964, p.196). Even the most casual observer would agree that different individuals (or the same individual at different times) engaged in the same task, with the same ability, and facing the same environmental constraints, often exert varying amounts of effort. To the extent that performance is a function of effort, it follows that they also perform at different levels. When asked to explain these differences in performance, both practitioners and academicians are likely to attribute the differences in performance to differences in motivation.

While motivation is often used to explain variance in performance, there is little agreement on precisely how such a construct should be defined or measured. Steers and Porter (1983) summarize four prominent researchers' definition of motivation:

> Atkinson (1964): the contemporary (immediate) influences on the direction, vigor, and persistence of action.
>
> Jones (1955): how behavior gets started, is energized, is sustained, is directed, is stopped, and what kind of subjective reaction is present in the organism while all this is going on.

> Vroom (1964): a process governing choices made by persons or lower organisms among alternative forms of voluntary activity.
>
> Campbell & Pritchard (1976): a set of independent/dependent variable relationships that explain the direction, amplitude, and persistence of an individual's behavior, holding constant the effects of aptitude, skill, and understanding of the task, and the constraints operating in the environment.

Cognitive motivation theories, such as goal setting or expectancy theory, hypothesize that the direction, amplitude, and persistence of behavior is influenced by unobservable mental constructs and processes. Within a cognitive framework Campbell and Pritchard's definition can be clarified by specifying that the domain of motivation theories is the study of the relationship between unobservable emotional and cognitive constructs and the direction, amplitude, and persistence of behavior while holding other factors (such as ability and environmental constraints) constant.

Also, because an individual's emotions and mental processes are influenced by environmental stimuli, motivation may also be studied as a dependent variable. In such a case the focus is on identifying the variables which influence those emotional and cognitive constructs related to the direction, amplitude, and persistence of behavior.

Existing Cognitive Motivation Theories

For the last 20 years goal setting theory and expectancy theories have been two of the most prominent cognitive theories of motivation.

Goal Setting

A goal is what an individual is trying to accomplish. It is the object or aim of an action. The term goal refers to attaining a specific standard of proficiency on a task, usually within a specified time limit (Locke, Saari, Shaw, & Latham, 1981). Because the definition of goals is the same as Vroom's (1964, p. 196) definition of performance, the terms "performance level" and "goal level" are synonymous. Other synonyms include the terms "performance standard," "quota," "work norm," "task," "objective," "deadline," and "budget" (Locke et al., 1981, p. 126). As the diversity of terms indicates, goals have important implications for fields as different as strategic management (Richards, 1986), cost accounting (Horngren, 1982), and sports (Locke & Latham, 1985).

The goal construct has a historical research stream which begins with the work of Lewin and his associates on the determinants of the level of aspiration (Miner, 1980, p.169), the work of Drucker, McGregor, Odiorne, and others on management by objectives (Miner, 1980, p. 169), and even back to Fredrick Taylor, the father of scientific management (Locke, 1978).

Much of the recent interest in goals began in the 1960's as a result of the investigation of the effects of goal setting by Locke (primarily lab experiments) and Latham (primarily field experiments). These theorists had two fundamental hypotheses (Locke et al., 1981)

1. specific goals lead to higher performance than "do your best" goals, or no goals; and
2. difficult goals lead to higher performance than easy goals.

The goals referred to in these hypotheses are an individual's goals, but the tests of the theory usually investigated the relationship between assigned goals and performance. Experimenters assigned goals by telling subjects that their goal was to achieve a certain level of performance within a given time period.

Although Austin and Bobko (1985) criticized goal setting theory for being narrowly focused and failing to consider areas such as goal conflict (i.e. quantity goals vs. quality goals), conflicts in goal-setting processes, individual versus group levels of analysis, and laboratory versus field settings most reviewers conclude that there is considerable empirical support for the two basic hypotheses (for reviews of empirical studies see Austin & Bobko, 1985; Campbell, 1982; Latham, 1984; Latham & Yukl, 1975; Locke, 1968; Locke, et al., 1981; Steers & Porter, 1974; and Tubbs, 1986).

Locke et al. (1981) concluded that the effect of goals on performance is one of the most robust and replicable findings in the psychological literature. Another author (Pinder, 1977, p. 169) commented that goal setting theory has demonstrated more scientific validity than any other theory of work motivation. Chidester and Grigsby (1984) state, "Unequivocally, setting either difficult or specific goals reliably results in increased productivity." In summary, this theory uses assigned goals to explain motivational differences in performance. To apply this theory one would assign difficult, specific goals--presumably the more difficult and more specific, the better.

Expectancy Theories

The other major cognitive motivation theory used by practitioners and academicians over the last fifty years is expectancy theory. Expectancy theory has been called, "the dominant paradigm for research on work-related motivation" (Connolly, 1976), and, "the most widely accepted theory of work and motivation among today's organizational psychologists" (Wahba, & House, 1974). The term "expectancy theory" does not refer to a specific theory, but to a body of related theories which hypothesize that people engage in a particular behavior because they choose to, and that their choices are based on "expectations" about the consequences of their actions. Individuals engage in behaviors which they believe will result in pleasure, and avoid behaviors they believe will result in pain (Lawler, 1973).

While most expectancy theories share these assumptions, there are at least two major conceptualizations of the way these expectations affect the direction, intensity, and persistence of behavior: expectancy theory choice models and expectancy theory force models.

Expectancy theory choice models. These models proposes that motivation is the result of an internal decision making process (House, Shapiro, & Wahba, 1974). While expectancy theory concepts can be found in the work of Lewin (1935) and Tolman (1932), and Georgopoulos, Mahoney, and Jones (1957), the first major appearance in organizational psychology was Vroom's 1964 book Work and Motivation.

Vroom's version of expectancy theory has two fundamental assumptions. The first assumption is that individuals have beliefs about the outcomes (consequences) which result from their behavior, and the causal relationship among these outcomes (Vroom, pp. 17-18). These beliefs are referred to as either expectancies or instrumentalities, and are similar to Kelly's (1973) notion of people as "naive scientists".

The second hypothesis is that individuals have affective reactions to outcomes. Affective reactions reflect the attractiveness, anticipated satisfaction, or, in Vroom's terminology, the valence of outcomes (Vroom, 1964, pp. 15-17). While there is still uncertainty as to the determinants of these valences, one of the major determinants is believed to be the pleasure or pain outcomes

provide (Vroom, 1964; Lawler, 1973). The term valence can be considered the equivalent of the term utility as used by subjective utility theorist such as Edwards (1955) and Savage (1954) (Sussmann & Vecchio, 1985).

When faced with a choice between alternative behaviors, the individual will choose the behavior which he/she anticipate will provide the most pleasure or avoid the most pain. This evaluation and decision making process is often referred to as "hedonistic calculus" (Lawler, 1973). Vroom discusses a variety of choices such as occupational choice, and choice among performance or effort levels. In terms of performance motivation, the theory predicts that individuals faced with a choice between high and low effort will pick the effort level with the highest expected value. If they believe high effort to have a higher expected value than low effort they will choose to exert a high level of effort, and will be considered to be "highly motivated." If the expected value of low effort is greater than the expected value of high effort, they will choose to exert a low level of effort, and will be considered "unmotivated." In summary, this model uses expected values to predict an individual's choice of a personal goal level, then uses differences in personal goal level to explain motivational differences in performance.

To apply this theory one would attempt to make high performance more rewarding than low performance.

Expectancy theory motivational force model. Although a major focus of Vroom's model is predicting behavior on the basis of within subject choices, early tests of the theory did not use a within subjects choice to predict behavior, but, instead, used between subject differences in the attractiveness of a single alternative (such as high performance) to predict behavior (see Schwab, Olian-Gottleib & Heneman, 1979 for a review of this literature). These models have been referred to as single force models (Kennedy, Fossum, & White, 1983). The hypothesis was that the greater the motivational force toward high performance, the more highly motivated the individual would be toward high performance, the more effort they would exert, and the higher their performance would be. The motivational force toward high performance was a funtion of the expected value of high performance. In summary, this theory uses motivational force to explain motivational differences in performance. To apply this theory one would increase motivation by increasing the magnitude of the expected value of high performance.

Problems with Existing Theories

Using any one of the existing theories alone to explain as complex a phenomenon as motivation, has inherent problems. Any one of the theories makes predictions which are inconsistent with both common sense and empirical reality.

Problems With the Goal Setting Model

The first problem with the goal setting model is the hypothesized linear relationship between goal difficulty and performance (Mento, Cartledge, & Locke, 1980; Locke et al., 1986). This implies that assigning increasingly difficult goals results in increasingly higher levels of performance. Based on goal setting theory alone, one would conclude that the only action necessary to solve motivation problems is to assign difficult, specific goals--presumably the more difficult and the more specific the better. As a matter of fact, some researchers have taken the position that it may be better to assign unattainable goals (Garland, 1982, 1983). While there is some empirical evidence which supports this position (Garland, 1982, 1983; Locke, 1982) there are also a number of studies which did not obtain a simple linear relationship between assigned goals and performance (Atkinson & Feather, 1966; Ivancevich and McMahon 1977; Latham & Saari, 1979; Motowidlo, Loehar, & Dunnette, 1978; Steers & Porter 1974).

Goal setting alone is unable to explain why an individual will choose one goal over another, or why individuals with the same goal will vary in the amount of effort they exert. As a result, a number of different reviewers (Latham & Yukl, 1975; Campbell, 1982; Campion & Lord, 1982; Chacko & McElroy, 1983; Naylor & Ilgen, 1984; Steers & Porter, 1974) have reached the conclusion that goal setting alone is an inadequate theory of motivation.

At one point even Locke (1975) believed that goal setting was not a theory, but a motivation technique (for a dissenting view see Miner,1980).

Problems With the Expectancy Choice Model

An expectancy choice model, on the other hand, would indicate that the only condition necessary for motivation is that high performance be perceived as having a higher expected value than low performance. This means that an individual would be equally motivated if the difference between high and low performance was one dollar or a million dollars. This theory (like goal setting theory) is incapable of explaining why individuals with the same goal may exert varying amounts of effort.

Problems With the Expectancy Force Model

An expectancy force model does explain why individuals with the same goal may exert differing amounts of effort. The difference would be due to differences in motivational force. However, it cannot explain goal choice. This theory would predict that an individual would exert more effort if the expected value of high performance was one million dollars than he/she would if the expected value was one dollar. However, it ignores the possibility that the expected value of low performance may be higher than the expected value of high performance and, therefore, the individual has a low performance goal and exerts little effort--no matter what the magnitude of the expected value of high performance is.

A motivation theory should be capable of explaining both the direction and intensity of behavior. With respect to goals, the theory should be able to explain goal choice (direction) and the effort exerted toward a goal (intensity). Any one of the theories alone is incapable of explaining both direction and intensity.

Solving the Problems with Existing Theories

Two approaches have been used to solve the problems with existing theories, 1) the theories have been viewed as complementary and two or more of the theories integrated (and the strengths of one theory used to offset the weakness of another theory), or 2) the theories have been viewed as contradictory (one of the theories is right and the others are wrong) and additional constructs have been added to one of the theories.

Theories as Complementary

Because the goal setting theory's major weakness is its inability to explain goal choice (Latham & Yukl, 1975), and since the expectancy theory choice model is formulated as an internal decision making model (House et al., 1974), theorists have argued that expectancy theory is a logical complement to goal setting theory (Campbell, Dunnette, Lawler, & Weick, 1970; Dachler & Mobley, 1973; Erez, Earley, & Hulin, 1985; Erez & Kanfer, 1983; Evans, 1986; Garland, 1985; Latham & Yukl, 1975; Locke, 1968; Locke, Lee, & Bobko, 1984; Locke, Motowidlo, & Bobko, 1986; Motowidlo, et al., 1978; Naylor & Ilgen, 1984; and Steers & Porter, 1974;).

Theories as Contradictory

It has also been argued that goal setting and expectancy force theories are contradictory (Mento et al., 1980; Motowidlio et al., 1978). Reviewers have criticized the expectancy motivational force model as an unacceptable operationalization of expectancy theory (Conolly, 1976; Heneman & Schwab, 1971; House & Wahba, 1972; Mitchell, 1974; Mitchell, 1979; Mitchell, 1982; Mitchell & Biglan, 1971; Wahba & House, 1974).

If the existing theories are contradictory, problems with existing theories (such as obtaining a non-linear relationship between assigned goals and performance) must be overcome by the addition of new constructs. For example, goal setting researchers explained the non-linear relationship between assigned goals and performance by saying that subjects did not accept the goal (introducing a new construct-goal acceptance) or were not committed to the goal (introducing a new construct-goal commitment).

The introduction of additional goal constructs introduces a new set of problems. Goal setting theory alone offers no explanation as to what determines goal acceptance or goal commitment (Locke, Latham, & Erez, 1988). If the determinants of goal acceptance and goal commitment are not clearly specified, predictions about goal acceptance and commitment cannot be made, and goal setting theory becomes untestable.

To quote Latham and Yukl,

> the greatest deficiency of Locke's theory is the failure to specify the determinants of goal acceptance and goal commitment. (1975, p. 841)

Consequently, a great deal of recent research has focused on the development of two new goal setting theory constructs--goal acceptance and goal commitment (i.e. Hollenbeck and Klein, 1987; Leifer and McGannon, 1986; Locke et al., 1988).

Justification for Proposed Theory Development

Before developing new constructs it must first be determined whether goal acceptance/goal commitment are really new constructs or are simply new names for constructs which already exist in other theories. Garland (1982, 1984) and Locke, Frederick, Lee, and Bobko (1984) concluded that goal setting and expectancy theory are no longer in conflict. If the theories are not contradictory, and the goal acceptance/goal commitment constructs can be explained by integrating existing theories, it would be preferable to use existing theories rather than continue the development of new constructs. Integrating existing theories is more parsimonious, has the advantage of using the body of knowledge associated with existing theories, and makes a significant theoretical contribution by providing what Landy and Becker (1987) have labeled a "middle range" type of motivation theory--a more comprehensive theory capable of explaining both the direction and the intensity of behavior.

Using an integrated theory to specify the determinants of goal acceptance and goal commitment clarifies the relationship between goals and other motivation constructs and theories, improves our understanding of why so may conflicting results have appeared when goal setting has attempted to address issues such as the role of extrinsic rewards and the probability of success, and allows more precise predictions about goal acceptance and goal commitment than is possible with models such as those proposed by Locke et al. (1988) or Hollenbeck and Klein (1987).

To be successful an integrated theory must (1) resolve the confusion between goal acceptance and goal commitment, (2) resolve the perceived conflict between goal setting and expectancy theory, and (3) resolve the perceived conflict between the expectancy choice model and the expectancy force model. Reconciling these conflicts will assist practitioners by explaining why an individual will choose one performance goal level but not another, why an individual will accept one assigned goal but not another, and why individuals with the same goal level may exert different amounts of effort.

These issues are addressed both conceptually and empirically. Chapter 2 reviews relevant literature, proposes an integrated model, and derives testable hypotheses. Chapter 3 describes a laboratory study used to test the major hypotheses derived in Chapter 2, Chapter 4

presents the results, and Chapter 5 contains the conclusions, discussion and implications.

Chapter 2

Literature Review

Because of the extensive literature which exist for both goal setting and expectancy theories, and because the focus of this study is on integrated models, only studies comparing two or more theories are reviewed in detail. The literature review contains a summary of: 1) the goal setting, expectancy choice, and expectancy force models, 2) arguments for and against integration, 3) development of the goal acceptance/goal commitment constructs, and 4) a description of an integrated theory. The review concludes with the hypotheses derived from the integrated theory.

Goal Setting, Expectancy Choice, and Expectancy Force Models

The Goal Setting Model

While Locke has attributed his interest in goal setting to Mace (1935) (Locke, 1966a, 1966b) and Ryan (1958) (Locke, 1968), most recent interest in goal setting is the result of the research began by Locke and Bryan in the 1960's (Bryan, & Locke, 1967a, 1967b; Locke, 1966a, 1966b, 1967, 1968; Locke & Bryan, 1966a, 1966b, 1967a, 1967b, 1968a, 1968b). The fundamental premise of these studies is that people have goals and intentions which affect what he/she does, and goals are the most immediate regulators of performance (Locke & Bryan, 1968b). They propose that as the difficulty of an individual's goal increases, task performance increases (Locke, 1968).

These propositions were an attempt to refute the behavioral, noncognitive, position of some researchers (Locke, 1968, Locke 1972, Locke, 1975). Although Locke was a cognitive theorist, the proposition that individual goals (IG) determine behavior, and subsequently individual performance (P), does not apply to all behavior, but only to purposive, goal-directed behavior. While arguing that most behavior is goal directed, Locke conceded that some behavior (such as reflexive behavior) is not goal directed (Locke, 1968). Therefore, although not recognized as such by Locke, the theoretical foundation of goal setting is a tautology. Goal-directed, purposive behavior must be related to goals or else it would not be goal directed behavior (Locke, 1969).

The original goal setting tautology hypothesized a relationship between an individual's goal (IG) and performance (P) or behavior, not between assigned goals (AG) and behavior. Many of the experiments designed to test the theory, however, did not test the relationship between individual goals and performance, but, instead, tested the relationship between assigned goals and performance (Bryan, & Locke, 1967a, 1967b; Locke, 1966a, 1966b, 1967, 1968; Locke & Bryan, 1966a, 1966b, 1967a, 1967b, 1968a, 1968b). These models assume that IG = AG, and that P = f(AG).

The hypothesis that assigning difficult, specific goals will increase performance has received considerable empirical support. The theory has been tested using a

variety of laboratory tasks, such as brainstorming (Locke, 1966a), addition (Locke & Bryan, 1969), psychomotor tasks (Locke & Bryan, 1966), driving a car (Locke & Bryan, 1969a), figure selection (Bavelas, 1978), and chess (Campbell & Ilgen, 1976), as well as a variety of field task such as logging, clerical work, typing, computation, training, machine servicing, truck loading, ship loading, die casting, supervision, safety behavior, scientific and engineering work, key punching, technical work, customer service, assembly, telephone service work, writing, and various management tasks (Locke et al., 1985).

Locke et al. (1981), conclude that in 99 of 110 goal setting studies specific, hard goals led to higher performance than medium, easy, do-your-best, or no goals. Latham & Lee (1985) report that in 64 of 66 field studies specific, challenging goals resulted in higher performance than nonspecific goals, and that laboratory studies and field studies produce similar results--lending credibility to the use of laboratory studies in this particular area of research. Chidester and Grigsby (1984) concluded that, "Unequivocally, setting either difficult or specific goals reliably results in increased productivity."

The strong empirical support seems to have lead to the implicit assumption that assigning goals will always improve performance. The problem with such a conclusion is that one is lead to believe that the only action necessary to solve motivation problems is to assign difficult, specific goals.

Even worse, one could conclude that the more difficult the assigned goals the better--even to the point of suggesting, as some authors have (Garland, 1982; Garland, 1983; Locke, 1982) that it may be better to assign unattainable goals!

The Expectancy Theory Choice Model

The expectancy theory choice model's basic proposition is that motivation is the result of choices individuals make among alternative effort or performance levels. If an individual chooses to exert high effort over low effort, he/she is more highly motivated. Expectancy theory has also received a number of positive reviews. It has, for example, been called "the dominant paradigm for research on work-related motivation (Connolly, 1976)," and, "the most widely accepted theory of work and motivation among today's organizational psychologists" (Wahba, & House, 1974). For more extensive reviews of expectancy theory literature see Campbell, & Pritchard, 1976; Connolly, 1976; Heneman & Schwab, 1972; House & Wahba, 1972; Lawler, 1973; Mitchell, 1974; Mitchell, 1979; Mitchell, 1982; Mitchell & Biglan, 1971; Schwab et al., 1979; Wahba & House, 1974.

Although constructs and hypothesis similar to those in expectancy theory can be found in the work of motivation theorist such as Georgopolous, Mahoney, and Jones (1957); Lewin (1935); and Tolman (1932), most recent interest in expectancy theory stems from Vroom's 1964 book Work and Motivation. Vroom assumes that behavior is the result of choices among alternative courses of action, and that

choices are lawfully related to psychological events occurring contemporaneously with the behavior described. It is a cognitive model similar to models developed by Atkinson (1958); Davidson, Suppes, and Siegel (1957); Lewin (1938); Peak (1955); Rotter (1955); and Tolman (1959) (Vroom, 1964, p. 14). Vroom's model has three constructs: valences, expectancies, and instrumentalities.

Valences. Valences are defined as affective orientations toward particular outcomes. The term "valence" is similar to the terms "incentive" (Atkinson, 1958b), "attitude" (Peak, 1955), and "expected utility" (Edwards, 1954) (Vroom, 1964, p. 15). While distinguishing between values and valences on the basis of anticipated satisfaction (valence) versus experienced satisfaction (value), Vroom discusses valences in much the same way Rokeach (1973) discusses values. Some outcomes have value in and of themselves (what Rokeach would call terminal values), while other outcomes have value only because they lead to other desired outcomes (Rokeach's instrumental values).

While Vroom offers no explanation as to how terminal outcomes acquire their valence, the valence of an instrumental outcome is a monotonically increasing function of the algebraic sum of the products of the valences of all other outcomes and the instrumentality of the outcome for the attainment of these other outcomes (Vroom, 1964, p. 17).

VALENCE MODEL

$$V_j = f_j \left[\sum_{k=1}^{n} (V_k I_{jk}) \right]$$

where:
$j = 1...n;\ f_j'>0;\ iI_{jj}=0$
V_j = the valence of outcome j
I_{jk} = the cognized instrumentality of outcome j for the attainment of outcome k, and $-1 \leq I_{jk} \leq 1$.

Instrumentalities. Instrumentalities are defined as outcome-outcome associations which can range from -1 (outcome j is certain without outcome k and impossible with it) to +1 (outcome j is a sufficient and necessary condition for the attainment of outcome k) (Vroom, 1964, p. 18). Vroom (1964, p. 18) states that the valence model is useful in understanding preferences, but is not able to predict choices. To predict choices a third construct, expectancies, is introduced.

Expectancies. Expectancies are defined as act-outcome subjective beliefs or probabilities similar to what Tolman (1959), Rotter (1955), Atkinson (1958b) call expectancies and what Edwards (1954), Davidson et al. (1957) call subjective probabilities (Vroom, 1964, p. 17). These expectancies reflect an individuals beliefs about the consequents of behavior alternatives. The combination of expectancies and valences results in a force model often referred to as the "expectancy model."

The expectancy model, or force model, is a descendant of force models such as Tolman's performance vector (1959), Atkinson's aroused motivation (1958b), Luce's subjective

expected utility (1962), and Rotter's behavior potential (1955) (Vroom, 1964, p. 18). The basic proposition is that

> the force on a person to perform an act is a monotonically increasing function of the algebraic sum of the products of the valences of all outcomes and the strength of his expectancies that the act will be followed by the attainment of these outcomes (Vroom, 1964, p.18)

FORCE MODEL

$$F_i = f_i \left[\sum_{j=1}^{n} (E_{ij}V_j) \right] \quad (i = n+1...m)$$

where:

F_i = the force to perform act i.

E_{ij} = the strength of the expectancy ($0 \leq E_{ij} \leq 1$) that act i will be followed by outcome j.

V_j = the valence of outcome j.

People choose from among alternative acts the one with the strongest positive (or weakest negative) force (Vroom, 1964, p. 19). The only assumption about rationality is that of subjective rationality (Vroom, 1964, p. 18). Given a choice among effort levels, Vroom's model predicts that an individual with the motivation force scores (MFS) in Figure 1 would choose to work at goal level four.

Very few studies have used a choice model to predict effort. Kennedy et al. (1983) predicted the time spent by students on various activities--studies, athletics, social activities, spiritual activities, service toward others, and leisure. They obtained MFS scores for each of five effort levels for each activity, then used the motivational scores to predict the effort level the subject would choose.

The model predicted that the students would spend more hours on each activity than was actually spent.

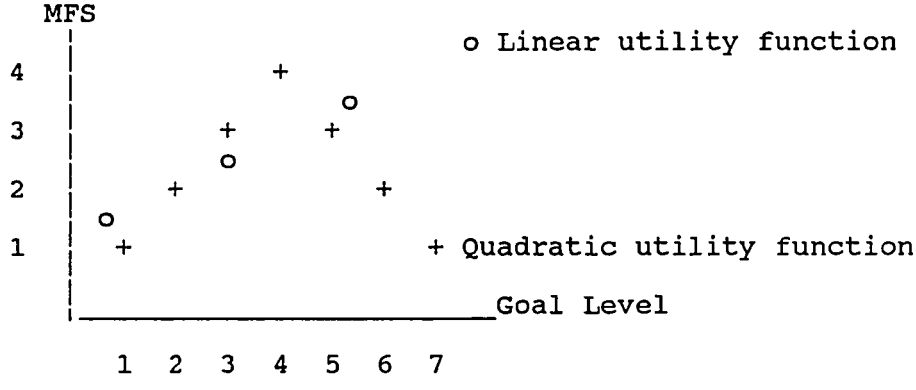
In summary, in the expectancy choice model goal is the sole determinant of effort, and goal is equal to the point where the first derivative of the utility function (the slope) is equal to zero--the maximum point of the utility curve. Apparently it is assumed that the utility function is quadratic, since a linear utility function would predict that everyone would have the same goal (see Figure 1).

The Expectancy Theory Force Model

Although the discussion thus far has presented expectancy theory as a within-subjects decision model, until 1974 virtually all of the tests used a between-subjects design (Mitchell, 1974). In such designs, differences in the magnitude of individuals expectancies, valences, or motivational force for a single alternative were used to explain motivational differences in individuals performance. Galbraith and Cummings (1967), for example, tested a model which included an intrinsic outcome (ego involvement) as well as a variety of extrinsic outcomes (such as being popular with coworkers, a pay increase, support and consideration of supervisor, promotion, and fringe benefits). Effort and performance were assumed to be perfectly correlated and expectancies were not measured; the instrumentality and valence measures were dummy coded and used as predictors of performance (measured as the average monthly percentage of standard).

Figure 1

Effort Utility Curve Example



MFS = Motivational force score

The only significant predictor was an interaction term which contained the instrumentality and valence of supervisor support and consideration.

Lawler and Porter (1967) also assume a high correlation between effort and performance. While they measured the probability that effort would lead to certain outcomes (a measure of expectancy) as well as the probability that high productivity or high performance would lead to these outcomes (a measure of instrumentality) they ended up combining them into one index. While valences times expectancies predicted better than valences or expectancies alone, providing some support for expectancy theory, the correlation between instrumentality and effort was only .11 and the correlation between instrumentality and performance was only .18. The proposed interaction between role perceptions and motivation was not supported.

Lawler (1968) did one of the few longitudinal studies in expectancy theory research. Two measures, one year apart, were obtained for performance and instrumentality-valence. The cross-lagged correlations indicated that the instrumentality-valence effect on performance was stronger than the performance effect on instrumentality-valence. Hackman and Porter (1968) examined the relationship between instrumentality and performance, valence and performance, and instrumentality times valence and performance. The multiplication of instrumentality and valence yielded higher correlations than any of the other possible combinations.

Porter and Lawler (1968) used the same measures used by Lawler and Porter (1967). Both instrumentalities and role perceptions were significant predictors of performance, but the interaction terms were not significant.

Problems with the Goal, Choice, and Force Models

As was pointed out in Chapter 1, any one of the theories alone has inherent weaknesses. Goal setting alone is unable to explain why a person chooses one goal but not another, and is incapable of explaining why individuals with the same goal, the same ability, and the same constraints exert different amounts of effort. The expectancy theory force model is capable of explaining why individuals with the same goal would exert different amounts of effort, but is unable to explain goal choice. The expectancy choice model is capable of explaining the choice among performance goals, but is incapable of explaining why an increase in the magnitude of a reward would increase motivation.

The differences in these models can be illustrated by using the example of two individuals (I1 and I2) faced with a choice of performance goals (see Figure 2). A goal choice model predicts that both individuals will choose the same goal (medium performance). Because they have the same goal, both the goal setting model and the expectancy choice model predict that they will exert the same amount of effort

In the goal setting and expectancy choice models the magnitude of the utility is irrelevant. Even though the medium goal level has much higher utility for I2 than for

I1, these models predict that both individuals will exert the same amount of effort.

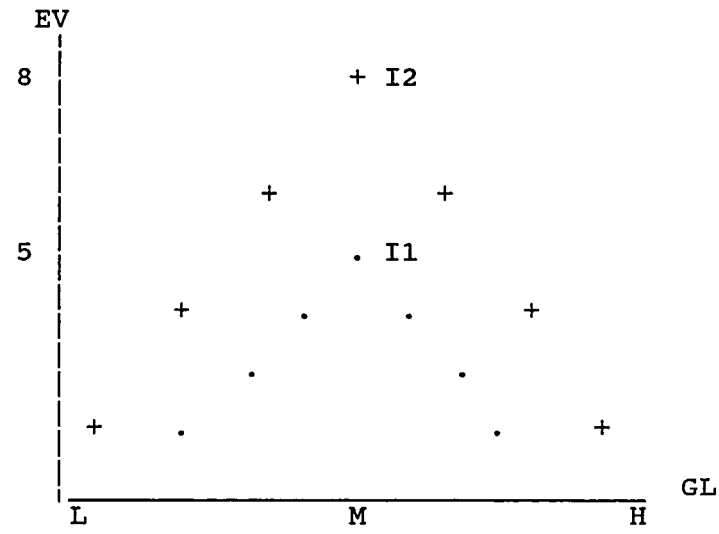
Thus an individual offered $1 for completing a task, and nothing if isn't completed, would be just as motivated as the person offered $1,000,000 for completing the task and nothing if it isn't completed, a theoretical prediction vastly at odds with common sense and experience. On the other hand, a motivational force model would predict that I2 would exert more effort than I1 even though they both have the same goal, because the magnitude of the motivational force (expected value) is greater.

Existing Views of the Relationship Among the Theories

Opinions about the relationship between expectancy theory and goal setting theory range from one extreme, where theorist argue that the theories are complementary and should be integrated, to the other extreme where the theories are believed to be contradictory. One of the reasons such different conclusions have been reached is that theorist have failed to distinguish beteen expectancy theory choice models and expectancy theory force models. If the distinction between the choice and force models are recognized, it can be seen that those theorist who believe the theories to be complementary are talking about the expectancy choice model and the goal setting model, while those theorist who believe the theories to be contradictory are talking about the expectancy force model and the goal setting model.

Figure 2

Difference Between the Goal Choice & Goal Force Models



EV = expected value
GL = goal level
L = low
M = medium
H = hard
I1 = individual one
I2 = individual two

Theories as Complementary

Because the goal setting theory's major weakness is its inability to explain goal choice (Latham & Yukl, 1975), and because the expectancy theory choice model is formulated as an internal decision making model (House et al., 1974), theorist have argued that expectancy theory is a logical complement to goal setting theory (Campbell, Dunnette et al., 1970; Dachler & Mobley, 1973; Erez et al., 1985; Erez and Kanfer, 1983; Evans, 1986; Garland, 1985; Latham & Yukl, 1975; Locke, 1968; Locke et al., 1984; Locke et al., 1986; Motowidlo et al., 1978; Naylor & Ilgen, 1984; and Steers & Porter, 1974).

Dachler & Mobley's model. The earliest attempt to integrate expectancy theory and goal setting, was the work of Campbell et al. (1970). Task goals were introduced as an additional expectancy theory construct, but they did not specify the nature of the relationship between expectancies, valences, and goals. In 1973, Dachler & Mobley, using the earlier theoretical model of Campbell et al. (1970), were the first to use formulations similar to Vroom's to predict performance goal choice. In their model an individual faced with a choice among goal levels is predicted to choose the goal level with the highest expected utility (EU). The expected utility of a goal is obtained by multiplying the expectancy that a given alternative is attainable (E) times the expected value of that alternative (EV).

Based on their description, the formula would be: $EU_g = E_g \text{ X } EV_g$. E is a function of situational restraints (SR) and ability (A). The expected value of each alternative is the sum of the products obtained by multiplying the probability that an outcome will result from accomplishing a given goal (E2) times the valence (V) of the outcome. Their description would result in the following formula (they apparently assumed the valence of a given outcome (j) is constant across all levels of G).

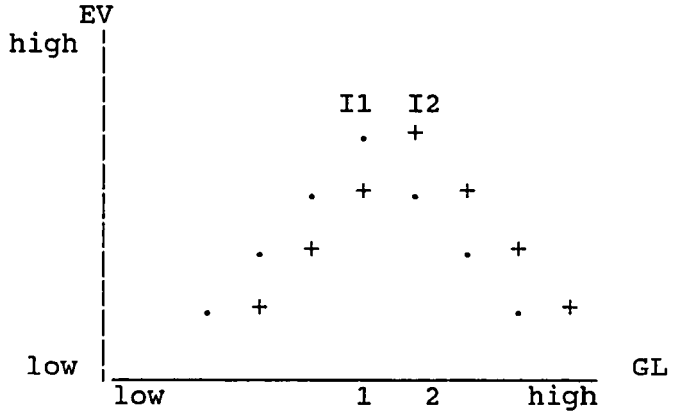
$$EV_g = \sum_{j=1}^{n} (E2_{gj} * V_j)$$

E2 is a function of rewards and punishments (RP). Rewards and punishments (RP) are a function of past performance. The goal with the highest expected utility then becomes the individual's goal. Effort is a function of the individual's goal. Finally, performance (P) is a function of effort, ability, and situational restraints.

The integration of goal setting and expectancy theory is achieved by assuming that choice among effort levels (hypothesized by Vroom) is the equivalent to a choice among performance goal levels, as Figure 3 illustrates. The theory predicts that individual One (I1) will choose goal level 1, while individual Two (I2) will choose goal level 2. As a result of the higher goal, I2 will exert higher effort and, assuming ability and no environmental restraints, perform at a higher level.

Figure 3

The Goal Choice Model as the Determinant of Goal Level



EV = expected value
GL = goal level
I1 = individual one
I2 = individual two

Dachler and Mobley's integrated model was tested in two different plants. In Plant 1 the correlations between predicted goals and actual goals, and between goals and performance were significant, but the correlations were generally low (.30 or below). In Plant 2 the relationship between predicted goals and actual goals were also significant (with correlations again around .30), but the correlations between goals and performance were generally either not significant or very low (.16 or lower). As a result, the tests were not conclusive.

Evan's model. Evan (1986) has also proposed a model to use expectancy theory to predict goal choice where

$$M_a = IVA_a + EI_a \{IVB_a + Sum(E2_{aj} \times EV_j)\},$$

$M_{a..n}$ are the motivational forces associated with goals a..n;
$IVA_{a..n}$ is the anticipated satisfaction associated with working at a level so as to achieve goals a..n;
$EI_{a..n}$ is the expectancy or perceived probability that the individual can attain goal a..n;
$IVB_{a..n}$ is the anticipated satisfaction that the individual expects to gain from attaining goals a..n;
EV_j are the anticipated satisfactions associated with extrinsic rewards (compensation, promotion, time off, etc.); and
$E2_{aj}$ is the set of probabilities that extrinsic reward j will follow as a consequence of achieving goal a.

He argues that when faced with a choice among goals, an individual will choose the goal with the highest motivational force (M_a). So far Evan's model has not been empirically tested. The causal order assumed by Dachler & Mobley (1973) and Evans (1986) is:

Goal Assignment-->Goal Choice-->Goal-->Effort-->Performance

Theories as Contradictory

The goal setting model vs. the expectancy force model. It has also been argued that the theories are mutually exclusive, contradictory, explanations of motivation, which means the theories cannot be integrated (Mento et al., 1980; and Motowidlo et al., 1978. These authors reach their conclusions by comparing the predictions made by the goal setting model with predictions derived from the expectancy force model. They begin with two propositions. The first is that goal setting hypothesizes a positive, linear relationship between an individual's goal (GL) and performance (PL). The second is that the expectancy force theory hypothesizes a positive, linear relationship between expected utility (EU) and performance. Valences and expectancies are assumed to be independent. They argue that because an increase in goal level should decrease the probability of success, and expectancy theory multiplies valence and the probability of success to calculate motivational force, if valences remain constant decreasing probabilities of success would result in lower motivation and lower performance (Motowidlo et al., 1978).

The authors conclude that expectancy theory would predict a negative linear relationship between goal level and performance--the opposite of the prediction made by goal setting.

Even though these researchers do not differentiate between the expectancy choice and the expectancy force

models, the perceived conflict must be between the goal setting model and the expectancy force, or what some researchers (Kennedy et al., 1983), have labeled a single-alternative expectancy model. The model is an expectancy force model because expectancies and valences were measured with respect to only one goal--the individual's assigned goal. Performance or effort was correlated with either expectancy, valence, or expectancy * valence. There is no conflict with an expectancy choice model because the expectancy choice model makes no predictions about the consequences of increasing or decreasing the expected utility of any specific act, but only make predictions based on the relative attractiveness among acts.

Atkinson (1957), who explicitly assumes that expectancies and valences are not independent, but, instead, expectancies determine the degree to which individuals experience intrinsic satisfaction from goal achievement, has also used an expectancy force model to reach a conclusion contradictory to the goal model. Atkinson (1957) theorized, and provided empirical support for (Atkinson, 1958a, 1958b), a curvilinear relationship between goal level and performance. Atkinson's achievement theory assumes that when no extrinsic outcomes are present the strength of the motivation toward an act is equal to the motivation to achieve success (M_s) minus the motivation to avoid failure (M_f). M_s is equal to the probability of success (P_s) times the incentive value of success. The incentive value of

success is equal to $(1-P_s)$. M_f is equal to the probability of failure (P_f) times the incentive value of failure. The incentive value of failure is equal to $-(1-P_f)$. If M_s is greater than M_f, and if one assumes that performance is a function of the strength of motivation to perform an act, then the relationship between goal level and performance would be curvilinear with maximum performance occurring when the probability of success is .5-a moderately difficult goal level.

Attempts to resolve the conflict empirically (Arvey, 1972; Motowidlo et al., 1978; Mento et al., 1980) were inconclusive with the first two studies interpreted as supporting expectancy theory or achievement theory, while the results in the third study were interpreted as supporting goal setting.

The expectancy choice model vs the expectancy force model. Reviewers have also criticized the expectancy motivational force model as an unacceptable operationalization of expectancy theory (Connolly, 1976; Heneman & Schwab, 1972; House & Wahba, 1972; Mitchell, 1974; Mitchell, 1979; Mitchell, 1982; Mitchell & Biglan, 1971; Wahba & House, 1974). They view the expectancy force model as contradictory to the expectancy choice model because tests of the motivational force model have used a between-subjects design even though, according to these researchers, Vroom's model requires a within-subjects design.

In addition to its theoretical correctness, at least two other reasons have been offered for preferring a within-subjects test of the theory. First, individual differences (which could produce theory error in between-subjects test) are not relevant in within-subject designs (Kopelman, 1979). Second, the lack of ratio level data (which make tests between subjects difficult) (Schmidt, 1973) is not a problem for within-subject designs because within-subject designs do not require ratio level measurement (Ilgen, Nebeker, & Pritchard, 1981).

Addition of the goal acceptance/goal commitment constructs. If the existing theories are contradictory, problems with existing theories (such as obtaining a non-linear relationship between assigned goals and performance) must be overcome by the addition of new constructs. While new constructs have been added to both goal setting and expectancy theory (see Miller & Grush, 1988, for an example of constructs added to expectancy theory) two constructs (goal acceptance and goal commitment) added by goal setting researchers are most directly related to the integrated theory being developed here, and are the only additional constructs considered.

One explanation offered for the nonlinear relationship between assigned goals and performance is that individuals do not always accept assigned goals (Erez & Kanfer, 1983), or are not committed to the goal (Locke et al., 1981). The simple linear relationship between goal difficulty and

performance can only be asserted if goal acceptance is assumed (Locke et al., 1981).

Locke (1968) contains one of the first models which attempts to integrate the goal acceptance/goal commitment constructs into the goal setting model. In this model: Environmental Event -> Cognition -> Evaluation -> Goal Setting -> Performance.

Goal assignment can be interpreted as an environmental event which would trigger cognition, evaluation, and ultimately individual goals. While the importance of goal acceptance and goal commitment is recognized, no attempt is made to identify the specific determinants or processes affecting these variables. It is hypothesized that monetary rewards and other incentives primarily affect the acceptance of assigned goals, but no attempt is made to specify precisely how.

In an article by Locke, Cartledge, and Knerr (1970) the 1968 model is expanded to:

Existents -> Cognition -> Affective Reaction -> Goal Setting -> Actions

As the result of evidence presented in the article, the evaluation stage is hypothesized to include anticipated incentives or outcomes, and the affective stage is expanded to include anticipatory emotions and desires (the judged instrumentality of anticipated goals). When assigned a goal the individual makes a choice to attempt the assigned goal level, or some other level. The willingness to accept a goal would be a function of the extent to which the expected

outcomes of goal achievement are desired outcomes. No specific directions are given for predicting goal choice, and no empirical test of the goal choice model is provided.

Erez et al. (1983) hypothesize that goal assignment is the initiator of goal choice. They frame the choice as one of choosing to accept or not accept the goal, and propose that individuals will choose a goal if the expected utility of choosing the goal is higher than the expected utility of not choosing the goal. They do not specify a precise formula for calculating the expected utility of accepting or not accepting a goal. Participation in goal setting is viewed as one strategy for gaining goal acceptance. Although Erez, Early, and Hulin (1985) provide empirical evidence which supports the participation hypothesis, they do not test the hypothesis that goal acceptance can be predicted by using the expected utility of goal acceptance and goal rejection.

The introduction of additional goal constructs, such as goal acceptance and goal commitment, led to a new set of problems. Goal setting theory offers no explanation as to what determines goal acceptance or goal commitment (Locke et al., 1988). If the determinants of goal acceptance and goal commitment are not clearly specified, predictions about goal acceptance and commitment cannot be made, and goal setting theory becomes untestable. To quote Latham and Yukl (1975)

> the greatest deficiency of Locke's theory is the failure to specify the determinants of goal acceptance and goal commitment. (p. 841)

Consequently, a great deal of recent research has focused on the development of the goal acceptance/goal commitment constructs (e.g. Hollenbeck & Klein, 1987; Leifer & McGannon, 1986; Locke et al., 1988). Locke et al. (1988) recently proposed that goal commitment is the result of certain cognitive processes which are influenced by external factors (such as authority and external rewards and incentives), interactive factors (participation), and internal factors (expectancy, self-efficacy, and internal rewards). Hollenbeck and Klein (1987) propose that the two major determinants of goal commitment are the attractiveness of goal attainment and the expectancy of goal attainment, and that attractiveness and expectancy are determined by various situational and individual variables. While they have tested the relationship between some of the individual measures and goal commitment (Hollenbeck & Brief, 1987; Hollenbeck & Williams, 1987), they have not directly tested the relationship between attractiveness or expectancy and goal commitment.

Problems with goal acceptance/goal commitment. There are several problems with the existing state of development of the goal commitment/goal acceptance constructs. One is that none of the theories provide a specific, testable hypothesis about how cognitive processes involving

variables such as expectations or attractiveness determine goal acceptance/goal commitment. Second, none of the models have any empirical support for the linkage between expectations/attractiveness and goal commitment.

Also, even though a review of the recent conceptual work in goal commitment indicates that the determinants being proposed for goal commitment are in fact the same variables which have traditionally been used in expectancy models, no attempt has been made to compare the goal acceptance/goal commitment constructs with constructs or processes which already exist in expectancy theory such as goal choice or motivational force. Before continuing the development of new constructs it is important to question critically whether the theories are really in conflict, and whether goal acceptance/goal commitment are really new constructs or are simply new names for existing constructs.

If the theories are not contradictory, and the goal acceptance/goal commitment constructs can be explained with existing expectancy theories, it would be preferable to use existing theories rather than continue the development of new theories. Such an approach would be more parsimonious and would have the advantage of utilizing the body of knowledge associated with existing theories. One problem with making such an evaluation is that, at the moment, there is no consensus as to how the terms should be defined, or even whether goal acceptance and goal commitment are two different constructs or are the same construct.

Locke et al. (1988) define goal commitment as "the attachment to or determination to reach a goal," and assume that goal acceptance is a special case of the more general goal commitment construct (the attachment to an assigned goal). In an earlier paper Locke et al. (1981) define goal commitment as the determination to keep trying for a goal, and goal acceptance as the extent to which one is committed to an assigned goal. The authors state that goal acceptance and goal commitment can vary independently--even though acceptance is defined in terms of commitment! Hollenbeck and Klein (1987) conclude that while commitment to difficult goals should be distinguished from acceptance of difficult goals, goal acceptance and goal commitment will be treated as a single construct (goal commitment) because there is considerable overlap between the two and because goal acceptance/goal commitment have been used interchangeably in previous research. Leifer and McGannon (1986) and Naylor & Ilgen (1984), on the other hand, view goal acceptance and goal commitment as conceptually and, in the case of Leifer and McGannon, empirically different constructs (Leifer & McGannon's factor analysis produced independent factors for goal acceptance and goal commitment).

The literature reviewed thus far indicates a great deal of confusion exists over whether the goal acceptance and goal commitment constructs are the same or different, how they should be predicted, or how they are related to the expectancy choice or expectancy force model.

An Integrated Model

A recent development in goal setting research offers an insight which can be used to resolve the perceived conflict between the goal setting and expectancy force model, the perceived conflict between the expectancy choice and the expectancy force model, and the ambiguity and confusion over the goal acceptance/goal commitment constructs. Garland (1984) and Locke et al. (1986) observed that even when ability is controlled there are two types of performance variance: variance between assigned goal levels, and variance within assigned goal levels. Each of these two types of variance requires a different type of explanation.

Variance Between Goal Levels

An integrated goal setting/expectancy choice model can explain the variance in effort between groups assigned different goal levels. This model attributes the differences in effort to differences in goals: individuals assigned hard goals have chosen to pursue more difficult goals than individuals assigned easy goals. This model is based on the assumption that a cognitive decision making process occurs between goal assignment and individual goal formation (Erez et al., 1983; Locke, 1968; Locke et al., 1970). The models of Evans (1986), Dachler & Mobley (1973), and Vroom (1964) discussed earlier specify the constructs involved in the cognitive decision making process, and provide specific, testable hypotheses about how the decision will be made.

Integrated Goal Choice Model

Assigned Goal --> Expectancy Choice Model --> Individual Goal --> Effort

For this model to be valid goal assignment must affect individual goal choice by affecting either expectancies, or valences. Naylor and Ilgen (1984) proposed that the primary effect of goal assignment is on the product-to-evaluation contingency function (the function which describes an individual's beliefs about how various performance levels will be evaluated, and subsequently rewarded). For example, money and other incentives would influence goal choice by making high goal levels more attractive than low goal levels. This hypothesis has not been tested. Matusi et al. (1981) do provide some evidence consistent with Garland's hypothesis. They demonstrated that (contrary to Atkinson's assumption of decreasing valences at high goal levels) an increase in goal level may result in an increase in the intrinsic satisfaction of goal achievement.

Garland (1985) views goal assignment as a form of social influence. He argures that people use assigned goals as a source of information about the expectations of goal assignors, as well as the probability of successful performing at various goal levels.

He proposes that 1) performance valence is a negative function of assigned task goals and performance expectancy, and 2) performance expectancy is a positive function of assigned task goal and ability. The performance valence

term is the sum of the valence of reaching each of several goal levels. The performance expectancy term is the sum of the probability of reaching at least each of several goal levels and is the same as what Bandura, 1977; Locke et al., 1984; and Locke et al., 1986 have called self-efficacy.

Garland reasons that when an individual has been assigned a goal he/she will believe that in order to receive a positive evaluation from the person assigning the goal, performance will have to be at the assigned level or higher. Therefore, goal levels lower than the assigned goal level will have less valence than goal levels equal to, or greater than, the assigned goal level. For example, if there are three possible goal levels, ranging from easy (1) to hard (3), and if individual A has been assigned goal level 2 while individual B has been assigned goal level 3, both levels 2 and 3 would have positive valence for individual A, while only level 3 would have positive valence for individual B. This means that individual B would have a higher goal, but a lower summed valence (a negative correlation between the summed valences and goals).

The positive relationship between assigned goals and performance expectancies is based on the assumption that an individual will believe that it must be possible to achieve an assigned goal, or authority figures (supervisors, experimenters, etc.) would not have assigned the goal. Goal assignment will cause an individual assigned a hard goal to believe the probability of reaching any given goal level is

higher than will an individual assigned an easy goal. For example if indiviudal A is assigned a difficult goal level (3) while individual B is assigned an easy goal level (1) then, according to Garland, individual A will reason that it must be possible to perform a level 3, or the goal would not have been assigned. individual B, on the other hand, will believe that goal level 3 must be impossible or they would have been assigned goal level 3 instead of goal level 2. Consequently, Garland predicts that individual A will assign a higher probability of success to each of the goal levels than will individual B. Hypotheses 1-4 summarize these arguments.

H1A: If a goal level (G) is assigned, then the intrinsic satisfaction of achieving the assigned goal level G will be higher than the intrinsic satisfaction of achieving goal levels lower than the assigned goal level (Naylor & Ilgen, 1984).

H1B: The summed valence of reaching each of all possible goal levels will be higher in the moderate goal condition than in the hard goal condition (Garland, 1985).

H2: Subjects in the hard goal condition will assign a higher subjective probability to achieving a given goal level (G) than the subjective probability assigned to the same goal level by subjects in the moderate goal condition. (Garland, 1985).

The third hypothesis tests the ability of the expectancy choice portion of the model to predict goal choice.

H3: If faced with a choice among goal levels, then the individual will choose the goal level with the highest expected value.

Hypothesis four test the relationship between the unified model and goal acceptance.

H4: If the difference between an individual's goal and assigned goal decreases, then goal acceptance will increase.

Variance Within a Goal Level

Variance due to goal acceptance. The variance in effort within a goal group could be due to the fact that an individual has chosen to pursue a different goal than the one assigned (lack of goal acceptance). Using goal acceptance to explain the within-group variance results in exactly the same model (the goal choice model) just used to explain between group variance. Erez et al. (1983) have proposed that when individuals are assigned goals, the decision is whether or not to accept the assigned goal. The problem with their explanation is that they have lumped all goals other than the assigned goal into the goal rejection option. Therefore, the model is incapable of predicting which goal the individual will choose if he/she does not accept the assigned goal.

The problem can be resolved if the decision to accept or not to accept a goal is recognized as a special case of

the more general expectancy goal choice model. The expectancy choice model can be used on a within-subjects basis to predict the goal the individual will choose. Goal acceptance would be defined as the difference between the individual's goal and the assigned goal (Hannan, 1975; Naylor & Ilgen, 1984). This approach has the advantage of defining and measuring goal acceptance very specifically, and specifying the relationship between goal acceptance and the expectancy choice model. It also allows goal acceptance to be predicted on an a priori basis.

Researchers have relied exclusively on differences in individual goals to explain variation in performance within a goal group. Garland (1984) hypothesizes that, within a group with the same assigned goal level, the probability of success and performance tend to be positively related and he argures that performance increases because an increase in the probability of success has results in higher individual goals and subsequently higher performance. Both Garland (1984) and Locke et al. (1984) report empirical results consistent with this hypothesis. Locke et al. (1984) tested a model which hypothesized that self-efficacy would be positively related to goals, which in turn would be positively related to performance. They also proposed a direct, positive relationship between self-efficacy and performance. Both the path coefficient between self-efficacy and goals, and the path coefficient between self-efficacy and performance were significant. The authors'

explanation is that a higher self-efficacy score indicates higher probabilities of success at higher goal levels which results in more difficult goals being set and therefore higher performance. Hypothesizing that probabilities (or self-efficacy) affect performance through their effect on individual goals is consistent with the significant relationship between self-efficacy and goals and the significant relationship between goals and performance. The hypothesis, however, does not explain the significant relationship between self-efficacy and performance. A significant relationship between self-efficacy and performance (with the influence of goals on performance already accounted for) would require variance in performance which is **not** due to differences in individual goals.

Variance due to goal commitment. If the within group variance is not due to differences in individual goals, what is it due to? The most likely explanation is that even though individuals have the same goal, they vary in their commitment to the goal. Although two individuals have the same goal, one may be much more willing to exert effort toward achieving the goal than the other (Naylor & Ilgen, 1984). Using goal commitment to explain the performance variance, however, does little good unless one can also explain the variance in commitment.

Fortunately, such an explanation already exists. As was discussed earlier, the central hypothesis of the expectancy force model is that changes in motivational force

(expected utility) result in variance in effort--even when individuals have the same goal. It seems reasonable to believe that the reason an increases in the expected value of goal achievement results in increased effort is because it increases commitment to the goal. An individual offered one million dollars for producing ten widgets should be more committed to producing 10 widgets than the individual offered one dollar for producing 10 widgets. This hypothesis is consistent with Bandura, from whom Locke et al. (1986) and Garland (1985) have borrowed the concept of self-efficacy. Even though Bandura never included the incentive value of a goal in empirical tests of his theories, he includes the incentive value of the goal in his theory as one of the determinants of effort (Bandura, 1977).

This would mean that a change in valences or a change in expectancies may have two effects. One would be to change an individual's goal by affecting goal choice. The other would be to change an individual's commitment to a goal by increasing the expected utility of goal achievement.

Integrated Goal Commitment Model

Assigned Goal	-->	Expectancy Force Model	-->	Goal Commitment	->	Effort

This suggests that the performance variance within a group with the same assigned goal observed by Garland (1984) and Locke et al. (1984) may not be the result of differences in individual goals, but, instead, may be caused by differences in the expected value of goal achievement. Such

a hypothesis is consistent with their observation that increases in the probability of success within a goal group were associated with increases in performance. Consider the example illustrated in Figures 4 and 5. (Assume the valences of not reaching a particular goal level to be zero. Locke et al. (1986) implicitly make the same assumption.)

As the example in Figures 4 and 5 illustrate, it is the utility of the goal which is changing as self-efficacy changes, not the goal level (both individuals would choose goal level 4). While the specific numbers used in the example can be questioned, they do contain several characteristics which make them consistent with the hypotheses discussed thus far. The example is consistent with empirical results obtained by Matusi et al. (1981) because the valences increase as goal level increases; the probabilities are decreasing across goal levels as Motowidlo et al. (1978) and Mento et al. (1980) suggest, and the self-efficacy scores are consistent with Locke et al. (1984); Locke et al. (1986). The example is also consistent with empirical tests of single force models which have found the motivation force score to be a significant predictor of effort (Schwab et al., 1979)--even when the within-subject goal choice has been taken into account (Dachler & Mobley, 1973; Kennedy et al. 1983).

Figure 4

Example of Changes in Probabilities Which Change Force but Not Goals

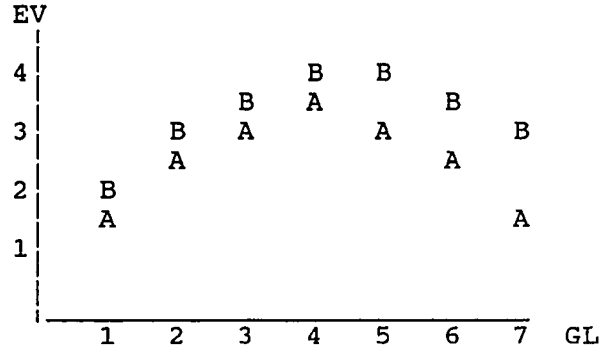
Goal Level		Probability		Valence*		Expected Value	
		Individual		Individual		Individual	
		A	B	A	B	A	B
low	1	.7	.8	2	2	1.4	1.6
	2	.6	.7	4	4	2.4	2.8
	3	.5	.6	6	6	3.0	3.6
	4	.4	.5	8	8	3.2	4.0
	5	.3	.4	10	10	3.0	4.0
	6	.2	.3	12	12	2.4	3.6
high	7	.1	.2	14	14	1.4	2.8
Self-Efficacy		2.8	3.5				

The numbers in the example result in the following utility curves.

* even if Atkinson's assumption of decreasing valences were used the conclusions would not change

Figure 5

Utility Curve for the Example in Figure 4



EV = Expected value
GL = Goal level
A = Individual A
B = Individual B

In Dachler & Mobley's study, in Plant 2 both the correlation between the predicted goal level and performance (.12) and the correlation between maximum expected utility and performance (.18) were significant. The results are consistent with both a goal choice and motivational force model. The approach used to obtain the motivational force scores in this study is different from the approach used in other between-subjects expectancy models in that they do not obtain force scores for an arbitrarily choosen goal level (such as high performance) but, instead, use the MFS calculated for the individual's predicted or stated goal level. This approach provides a theoretical justification for the goal level used. This theoretical justification is lacking in previous between subjects models and will be used in this study.

Kennedy et al. (1983) compared a within-subject model with a between-subjects model, and a force, choice, and difference model. The results indicate that the choice and the difference models yield significantly higher correlations than the single alternative model, but the correlations for the single alternative model were significant.

The recognition that differences in effort may be due to either differences in goals or due to differences in the commitment to a goal also removes the only remaining obstacle to integrating all three theories--the perceived conflict between the expectancy theory choice model and the

expectancy theory force model. Instead of being in conflict, each theory is explaining a different type of variance. The choice model is explaining goal choice which in turn explains differences in effort due to differences in goals. The force model is explaining the motivational force toward a goal which in turn explains the variance in the amount of effort exerted to achieve a goal. This would indicate that the force model is not just an inadequate operationalization of the choice model as indicated by some reviewers, but is a different conceptualization of the theory, one which recognizes the importance of the force toward a goal, not just the relative difference in force between goals. It would also indicate that the choice model and the force model are not contradictory, as the previous research reviewed would indicate, but are complementary.

Although previous research has not explicity recognized the conceptual relationship between the expectancy force model and the expectancy choice model proposed here, the idea that effort may change even though the performance goal has not changed can be seen in the writing of earlier theorticians. Vroom (1964), for example, clearly viewed the product of expectancies and valences as producing a "force" on an individual to act. To capture this conceptualization he used the term "motivational force score" to refer to the product of the expectancies and valences instead of more commonly used decision science terms such as "expected value" or "expected utility." Vroom (1964, p. 263) states

> other things being equal, we would expect the performance of workers to increase as the valence of effective performance increases.

Locke et al. (1981) state that one way incentives affect performance is to

> arouse the willingness to expend more effort to attain a given objective than not offering money [incentives].

This would explain why in some studies (such as Terborg, 1976) money has had an effect on performance independent of its effect on goal level.

The notion that effort varies with the strength of the expected utility of goal achievement is similar to earlier psychological theories of motivation. For example, need theories (i.e. Maslow, 1954) which developed apart from the decision science models such as Edwards, (1954) that Vroom relied on in formulating his version of expectancy theory, argue that the intensity of effort is a function of the strength of the need. Tolman's performance vector (1959), Atkinson's aroused motivation (1958b), and Rotter's behavior potential (1955) contain a similar conceptualization and are similar to Vroom's conceptualization of motivational force (Vroom, 1964, p. 18). The integrated goal commitment model results in the following hypotheses:

> **H5:** If the utility of a goal increases, then commitment toward the goal will increase.

H6: If commitment to a goal increases, then effort toward the goal will increase.

H7: If an individual's goal level increases, then effort will increase.

Proposed Unified Theory

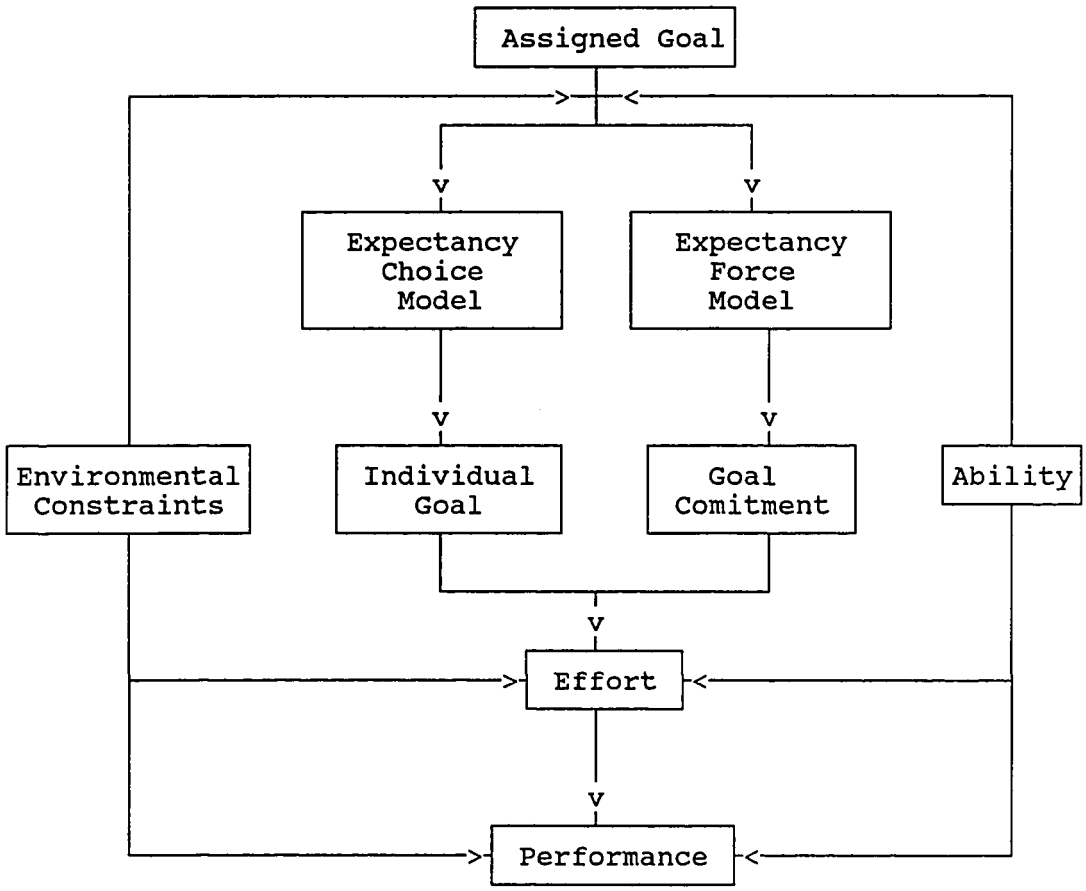
The literature reviewed suggests that while goal level may be one explanation for differences in performance, goal level alone is inadequate. In addition to goals, the magnitude of the expected value of goal achievement has a direct effect on performance by increasing goal commitment. This indicates that a within-subjects expectancy choice model should be used to predict an individual's goal (and subsequently goal acceptance), and an expectancy force model should be used to predict goal commitment. An integrated model which contains both personal goals and goal commitment should then be used to predict effort and performance. The result is a unified performance motivation theory which integrates the goal setting, goal choice, and goal force theories (see Figure 6). Assigned goals are hypothesized to affect both goal choice and the force toward a goal by influencing the valence of goals and the probability of achieving goals. The expectancy choice model predicts the individual's goal level, while the expectancy force model predicts goal commitment. The individual's goal level and the individual's commitment to that goal level are hypothesized to be the primary motivational determinants of effort. Effort, within the constraints of the environment

and ability, predicts performance. Ability and environmental constraints are hypothesized to influence choice by influencing an individual's perception of the probability and valence of achieving various goal levels. They are also hypothesized to directly influence effort and performance, although these linkages are not tested in this study.

The proposed theory is an improvement on existing motivation theories because it explains both the choice and intensity of behavior. The proposed theory resolves the existing confusion between goal acceptance and goal commitment by making clear that motivational force and/or goal commitment occurs with respect to a specific goal. If goal commitment is measured with respect to the assigned goal, then goal acceptance and goal commitment are the same. If goal commitment is measured with respect to the individual's personal goal, then goal commitment and goal acceptance are not the same. As explained earlier, the model also eliminates the perceived conflict between goal setting and expectancy theory and between the expectancy choice model and the expectancy force model. The model provides an explanation as to why an individual will choose one performance goal level but not another, why an individual will accept one assigned goal but not another, or why individuals with the same goal level may exert different amounts of effort.

Figure 6

Unified Performance Motivation Model



Alternative formulations. Kennedy et al. (1983) propose that not only may the magnitude of the motivational force score affect effort, but the magnitude of the difference between the MFS for high effort and the MFS for low effort may affect effort. The hypothesis is that the greater the difference, the greater the motivation and performance. If this model is correct, then not only may goal level (the maximum point of the utility curve) and goal utility (the height of the utility curve) affect effort, but the slope of the utility curve may be important as well.

Tests which have compared the single-alternative model, the choice model, and the difference model have concluded that the choice and difference models outperform the single force model, but the difference model performs as well or better than the choice model (Kennedy et al. 1983). Kopelman, Liebman, and Yukl (1978) tested what they referred to as a return-on-effort model. Return on effort was operationalized as the difference between the expected value of high effort and the expected value of low effort which indicates that the return on effort model and the difference model are the same. The correlation between return-on-effort and performance was higher than the correlation between motivational force and performance. The tests of these models did not use a marginal test of significance (by testing the increase in the significance of the model when one of the constructs is added to a model which already contains the other constructs).

The first seven hypotheses derived from the unified model test the various linkages in the model against a null model. For the unified model to be supported hypotheses 1-7 (particularly 3-7) should be supported. If the unified model is correct the immediate motivational determinants of effort are goal level and goal commitment. Therefore the unified model should predict better than any single construct (such as goals) and, adding additional motivational variables (such as, assigned goal level, self-efficacy, summed valence, motivational force, or slope) should not significantly improve the predictive ability of the model. The following hypotheses tests the unified model against alternative formulations.

Hypothesis 8 test the unified model against the traditional goal choice model. Support for this hypothesis indicates support for the unified theory, rejection indicates support for the traditional goal choice model.

H8: Adding goal commitment to a model that contains an individual's predicted goal (predicted on a within-subject basis using the expectancy choice model) will significantly improve the predictive ability of the model.

H9: Adding assigned goals to a model that contains goal commitment and an individual's goal will not significantly improve the predictive ability of the model.

Hypothesis 9 tests the unified model against the traditional goal setting model,and Hypothesis 10 tests the unified theory against the traditional expectancy force model.

H10: Adding the motivational force score for high performance to a model that contains an individual's goal and goal commitment will not significantly improve the model's ability to predict.

Hypothesis 11 test the unified theory against the alternative formulations which use slope (return on effort) (Kennedy et al., 1983; Kopelman et al., 1978).

H11: Adding the slope of the utility curve to a model that contains an individual's goal and goal commitment, will not significantly increase the model's ability to predict.

Hypotheses 12 and 13 tests the unified model against models that use self-efficacy or summed valence measures (i.e. Locke et al., 1986; Garland, 1985).

H12: Adding self-efficacy to a model that contains an individual's goal and goal commitment, will not significantly increase the model's ability to predict.

H13: Adding summed valence to a model that contains an individual's goal and goal commitment, will not significantly increase the model's ability to predict.

The hypotheses tested in this dissertation improve on existing tests in several ways. First, they directly test the effect of goal assignment on expectancies and valences which has not been done. Second, they test the ability of a within-subject choice model to predict goal choice. The only other equivalent test was Dachler & Mobley (1973) which was inconclusive. Also, the relationship between motivational force and commitment and between goal choice and goal acceptance is tested (neither relationship has previously been tested). Finally, the predictive ability of the unified model is tested against the expectancy choice model, the expectancy force model, and the goal setting model. Previous research has only tested each model against a null model, not with each other.

The findings should not only be of value to academics, but practitioners as well, particularly in the design and implementation of reward systems. Support for the goal model indicates that rewards may not be important as long as difficult goals are assigned. Support for the goal choice model indicates that the magnitude of the reward is irrelevant as long as high performance is rewarded more than low performance. Support for a goal force model indicates that the size or magnitude of the reward is the determinant of motivation. Support for the unified model indicates that both an individual's goal level and the perceived consequences of goal achievement are significant predictors of motivation, and that both must be considered when designing motivation systems.

Chapter 3

Research Methodology

Design

The goal of this study was to make causal inferences about variance in effort within and between goal levels. Therefore, a laboratory experiment was used to maximize both the within-goal and between-goal variance in those variables hypothesized to influence effort-probabilities, valences, and goals. The experimental design is a 2 X 2 X 2 factorial design with two covariates. The factors were: 1) assigned goal level, 2) probabilities, and 3) valences with sex and ability as covariates. Although sex differences were not a central issue in this research, sex was included as a covariate because it is possible that men and women react to goal assignment or goal difficulty differently.

A between subjects design was used because a between subjects design makes it more difficult for subjects to figure out the experimental manipulations. Pany & Reckers (1986) have demonstrated that within-subject designs can lead to misleading conclusions because respondents are easily able to perceive the manipulations within the task and infer the focus of the research, introducing the possibility of a strong demand effect.

Some reviewers have concluded that expectancy theory requires a within-subject design (Connolly & Wolf, 1981; Kopelman, 1977; Mitchell, 1982; Wolf & Connolly, 1981).

They base their conclusion on the fact that Vroom's theory requires a within-subject choice. A within-subject choice, however, is not the same thing as a within-subject design. In a within-subject design the same subject is administered various levels of the experimental treatment. A subject can be given a choice among many performance levels even if no treatments are given. As Kennedy et al. (1983) point out, the question is whether a choice model is used, or a single alternative model is used (see Chapter 2 for a discussion of the differences in these models) not whether a within or between subjects design is used.

The between subjects design has been criticized because the failure to adequately account for individual differences may lead one to conclude that a theory is not valid, when in fact the theory is valid (Kennedy et al., 1983; Kopelman, 1977). However, individual differences can be dealt with, as they were in this study, by using randomization, or, by measuring the variable and including it as a covariate. Between-subjects design have also been criticized because the lack of a ratio level valence measure (Arnold & Evans, 1979) makes between subjects comparisons impossible. Sussman & Vecchio (1985), however, demonstrate that it is possible to obtain a ratio level measure of valence compatible with Vroom's (1964) theory.

Subjects

The subjects were 253 undergraduate college students of Western Michigan University enrolled in the Introduction to

Statistics course. The students were given extra class points for participating in the experiment. The subjects were told the purpose of the experiment was to create a data base which could be used by future statistics students. 45% were female. 58% were sophomores, 34% juniors, and the remainder seniors or graduate students. 77% were between the ages of 18 and 21. The majority of the sample (91%) was white. 23% worked 40 or more hours a week, 45% worked between 20 and 40 hours per week, and 22% worked between 0 and 20 hours per week. The experiment was conducted during the students' normally scheduled class time. The subjects were randomly assigned to conditions by class section.

Task

The task was a ring toss similar to Atkinson and Litwin (1960), Litwin (1966), and Hamilton (1974). Based on personal conversations with Hamilton the equipment was constructed to be as similar to that used by Hamilton (1974) as possible. The equipment consisted of a peg 12 inches high and 1 1/4 inches in diameter. The peg was inserted into a hole in a 2 ft. by 2 ft. by 3/4 in. plywood base. The result was a stake similar to those used in horseshoes. Ten inch diameter rings were constructed from 3/8 in. flexible plastic tubing. The task was to go from a line to a box of rings, obtain one ring, return to the line, and attempt to toss the ring over the stake (see Figure 7). The

subjects scored one point each time they tossed the ring over the stake.

Each trial was two minutes long and the students could throw as many rings during the two minutes as they chose to throw (the box contained 21 rings and no one was able to retrieve and throw 21 rings during a two minute trial).

Experimental Manipulations.

The sequence of trials, manipulation, and measurement is indicated in Figure 8. The subjects participated in the ring toss trials in groups of eighteen (eighteen stakes were set up in an old gym adjacent to the college). This meant that while one-half the class was completing the ring toss the other half of the class was filling out a questionnaire. During the pretrial period, subjects were told they would have two minutes to score as many points as possible.

Goal manipulation. Goals levels were manipulated by telling the subjects that while the task was new to them, it was actually an ancient Chinese game (which my Chinese graduate assistant assured me was true), and that the Chinese try to score either six (moderate goal condition) or nine (extremely difficult goal condition) points within the two minute period. They were then told that now that they were familiar with the game they would be given another two minute period to play the "real" Chinese game, and that their goal for the next period should be to score either six or nine (depending on the goal condition) points.

Figure 7

Experimental Task

Figure 8

Sequence of Trials and Questionnaire Measures

1. Pretrial
2. Measure Effort & Performance
3. Assign goal and Inform of Reward if Applicable
4. Complete Questionnaire 1
5. Trial 1
6. Measure Effort & Performance; Complete Questionnaire 2
7. Trial 2
8. Measure Effort & Performance; Complete Questionnaire 3

Probability manipulation. Probabilities were manipulated by changing the distance between the line and the stake. Subjects in the moderate probability condition threw from a line which was 9 ft. from the stake (a priori objective probability of scoring a ringer equals .4); subjects in the low probability condition threw from a line which was 11 ft. from the stake (a priori objective probability of scoring a ringer equals .2). The stake was moved, not the line. This was done so that the distance between the line and the box would be 25 ft. in all conditions.

Valence manipulation. Valences were manipulated by telling the subjects in the reward condition that they would receive a reward if they scored at least the assigned number of points. The reward was a packet of coupons good for free food at a variety of fast food establishments (Mc Donalds, Burger King, Little Ceasar's Pizza, Pizza Hut). The approximate monetary value of the coupon packet was seven dollars.

Questionnaire Measures

Several of the variables were measured through questionnaires. A copy of the complete questionnaire is included in Appendix A.

Goals. The assigned goal measure asked subjects if their assigned goal was a) to score 4 points, b) to score 6 points, c) to score 9 points), d) to score 11 points, or e) something else.

The individual goal measure asked subjects if their personal goal was a) to score 1 or less points, b) to score 2 or 3 points, c) to score 4 or 5 points, d) to score 6 or 7 points, e) to score 8 or 9 points, f) to score 10 or 11 points, g) to score more than 11 points, h) to do your best, or i) something else. The goals were paired to reduce the number of responses subjects had to make. The effort goal measure asked subjects if they intended to a) run, b) jog, c) walk normally, or d) walk slowly during the next period.

Expectancies. Subjects were asked the probability of scoring a) 1 or more points, b) 2 or more points, c) 3 or more points, d) 4 or more points, e) 5 or more points, f) 6 or more points, g) 7 or more points, h) 8 or more points, i) 9 or more points, j) 10 or more points, k) 11 or more points. These probabilities were summed to calculate self-efficacy (Locke et al., 1986).

Valences. While a variety of other anchors for valence have been tried (such as behaviorally anchored rating scales, and importance) there is little evidence that they are superior to attractiveness or anticipated satisfaction (Ilgen et al., 1981; Pecotich and Churchill, 1981). Therefore, valences were measured by asking students how attractive they found the idea of 1) walking slowly, 2) walking normally, 3) jogging, and 4) running. They were also asked how attractive they found the idea of scoring a) 1 or less points, b) 2 or 3 points, c) 4 or 5 points,

d) 6 or 7 points, e) 8 or 9 points, f) 10 or 11 points, and g) more than 11 points. The third measure asked subjects how satisfied they would be if they scored a) 1 or more points, b) 2 or more points, c) 3 or more points, d) 4 or more points, e) 5 or more points, f) 6 or more points, g) 7 or more points, h) 8 or more points, i) 9 or more points, j) 10 or more points, or k) 11 or more points. The valence of each of the performance levels was summed to obtain Garland's (1985) summed valence measure.

In the extrinsic reward condition subjects were asked how attractive they found the reward, and how much they would pay for a packet of coupons.

Goal acceptance/goal commitment. Questionnaire items were developed for the goal acceptance and goal commitment constructs so self-report measures could be used to test the hypotheses in Chapter 2. The questionnaire items included the goal commitment items used by Hollenbeck, Williams, and Klein (in press) as well as the goal acceptance and goal commitment items used by Leifer and McGannon (1986). Principle components factor analysis (see Table 1) indicated that the questionnaire items loaded on three factors (the criteria for retaining a factor was an igenvalue equal to or greater than one, and items had to load .40 or greater on a factor to be retained). The three factors produced by the analysis were labeled goal acceptance, positive goal commitment, and negative goal commitment.

The items loading on the goal acceptance and positive commitment factors are the ones obtained from Leifer and McGannon (1986). However, the factor structure is not the same as theirs. The difference may be due to the fact that their analysis had 12 items and only 32 subjects. The results presented here are from an analysis of forty items. The analysis used all questionnaires completed during the experiment (605 useable questionnaires). The data set contained three questionnaires from each subject (each subject completed the same questionnaire three different times; see Figure 8). The analysis was also done separately for each time period with only Leifer and McGannon's (1986) items; and with just Leifer and McGannon (1986) and Hollenbeck et al.'s (in press) items, but the results were essentially the same. The only difference across these analysis is that if only Leifer and McGannon's items are used there is no negative commitment factor (since all the questionnaire items loading on the negative commitment factor are Hollenbeck's). This would indicate that the goal acceptance factor and the positive goal commitment factor are not influenced by the presence or absence of Hollenbeck's items.

The factors labeled postive or negative commitment may not be measuring commitment in the same way commitment was conceptualized in Chapter 2. Traditionally, goal commitment has been used to refer to assigned goals. In Chapter 2, however, goal commitment was defined as the willingness to exert effort toward an individual goal.

Table 1

Factor Loadings for Goal Acceptance/Goal Commitment Items

Goal Acceptance Items	Factor Loadings
1. How hard will you honestly try to achieve your personal goal?	.80
2. Acceptance of a goal means assuming the assigned goal as your own personal goal. To what extent do you accept the assigned goal for this game?	.76
3. Of the maximum effort (100%) you could exert in pursuit of your goal, what percentage do you think you will exert?	.76
4. To what extent will you strive to attain your goal?	.77
5. To what extent to you honestly accept the performance goal determined for you on this task?	.73
Cronbach's alpha = .90 Test-retest = .78	
Positive Goal Commitment Items	
1. How enthusiastic are you about attempting to achieve your personal goal?	.70
2. Commitment to a goal means the determination and persistence to achieve a goal. To what extent are you committed to your goal?	.73
3. How determined are you to reach your performance goal	.67
Cronbach's alpha = .71 Test-retest = .56	
Negative Goal Commitment Items	
1. There's not much to be gained by trying to achieve this goal	.56
2. It is quit possible that this goal needs to be changed	.54
3. Quite frankly, I don't care if I achieve this goal or not.	.49
4. It's unrealistic for me to expect to reach this goal	.49
5. It wouldn't take long for me to abandon this goal	.68
6. Since it's hard to tell how hard a goal is until you've played a game for awhile, it's hard for me to take this goal seriously	.68
Cronbach's alpha = .87 Test-retest = .74	

* test-retest correlation coefficients are between Trials 1 & 2

An attempt was made to obtain a separate measure of commitment to the assigned goal and commitment to the individual's goal by phrasing some of the questions so that they ask about "your goal," or "your personal goal," while other questions ask about assigned goals. Instead of obtaining two factors, however, only one factor which contained both types of questions emerged. This may mean that individuals were responding to all the questions as though they referred to either individual or assigned goals, or it may mean that for most individuals assigned and individual goals were the same.

Ability Measure. Ability was measured as the number of ringers scored during the pretrial.

Critera Measures. During each trial, effort was measured as the number of feet traveled by the subject during the two minutes, and performance as the number of ringers scored in two minutes.

Chapter 4

Results

Chapter 4 presents the results of the analysis of the data collected during the experiment. First, the results of tests of the experimental manipulations are presented. The experimental manipulations were analyzed to determine if the manipulations had created significant variance in the variables manipulated. Next, the results of the tests of the hypotheses related to each major linkage in the model presented in Chapter 2 are discussed.

Manipulation Checks

Goal assignment. The goal assignment manipulation was checked by asking subjects what their assigned goal was. Ten subjects were dropped because they reported assigned goals other than the one actually assigned to their group. Subjects were also asked, "How difficult do you think it will be to achieve the performance goal you were assigned?" (12 point response scale ranging from very easy [1] to very difficult [12]). The mean response in the moderate goal condition was 7.02 (s.d. = 2.89) and in the hard goal condition the mean response was 8.17 (s.d. = 2.58). The perceived difficulty in the hard goal condition was significantly higher than in the moderate goal condition ($p < .001$) which indicates the manipulation was successful.

Probabilities. Subjects in the low probability condition (11 ft. from the stake) should have perceived

lower probabilities of scoring points than subjects in the moderate probability condition (9 ft. from the stake). As Table 2 shows, in Trial 1 the subjective probability of achieving each goal level was higher in the moderate probability condition than in the low probability condition, indicating a successful manipulation.

Valences. The valence/reward manipulation was checked by asking subjects in the reward condition how attractive they found the coupons. The average response of 3.3 on a 7 point scale (from highly attractive [1] to highly unattractive [7] suggests subjects found the prize somewhat attractive. The average amount subjects would pay for a packet of coupons was $1.18.

There is some question about whether offering an extrinsic reward increases or decreases intrinsic satisfaction (Deci, 1976). In this experiment the reward was offered for achieving the assigned goal. If Deci is correct the intrinsic satisfaction of achieving the assigned goal (either 6 or 9 ringers) should be different between the reward and no-reward group. Table 3 and 4 compare the attractiveness of the two assigned goal levels for the reward and no-reward conditions. As can be seen from Table 3, during Trial 1 subjects perceived the goal of scoring 6 or 7 ringers to be more attractive in the no-reward condition. In Trial 2, however, there was no significant difference between the groups (Table 4). The attractiveness of scoring 8 or 9 ringers was not significantly different in the reward/no-reward conditions during Trial 1 or Trial 2.

Table 2

Probabilities-Low vs. Moderate Probability Condition
Trial 1

Prob. of scoring at least:	Low Prob. Condition	Moderate Prob. Condition	*F* test
1 point	.82	.85	2.62*
2 "	.74	.83	9.74***
3 "	.67	.80	19.36***
4 "	.58	.76	27.09***
5 "	.48	.70	44.42***
6 "	.40	.64	64.38***
7 "	.29	.56	84.37***
8 "	.21	.49	82.85***
9 "	.15	.41	69.90***
10 "	.09	.30	57.93***
11 "	.07	.20	22.42***

* p < .10
*** P < .01

Table 3

Intrinsic satisfaction-Reward vs. No Reward
Trial 1

Attractiveness of scoring	No Reward mean	Reward mean	*t* test
6 or 7 ringers	1.01	.65	5.14**
8 or 9 ringers	1.51	1.43	.68

** $p < .05$

Table 4

Intrinsic satisfaction-Reward vs. No Reward
Trial 2

Attractiveness of scoring	No Reward mean	Reward mean	t test
6 or 7 ringers	.71	.84	.52
8 or 9 ringers	1.42	1.54	1.01

The one significant difference in Trial 1 supports Deci's theory, but the three non-significant differences do not support his theory.

Test of the Linkage Between Goal Assignment and Expectancies/Valences

The unified model views goal assignment as an external event that affects motivation by influencing expectancies and/or valences and subsequently goal choice and motivational force. The first three hypotheses test this view by examining the effects of goal assignment on valences and expectancies.

> **H1A:** If a specific goal level (G) is assigned, then the intrinsic satisfaction of achieving goal level G will be higher than the intrinsic satisfaction of achieving any goal level lower than the assigned goal level. (Naylor & Ilgen, 1984).

For Hypothesis 1A to be supported subjects would have to perceive the attractiveness of scoring the assigned number of points to be higher than the attractiveness of any lower goal level. Table 5 contains the average response to the goal attractiveness question for the moderate goal condition, and Table 6 contains the same information for the hard goal condition. As can be seen from Tables 5 and 6, Hypothesis 1A is supported. In both goal conditions subjects perceive the assigned goal level to be more attractive than lower goal levels.

Table 5

Attractiveness of Assigned Goal Level vs. Other Goal Levels
Moderate Goal Condition-Trial 1
n=113

Attractiveness of scoring	Moderate Goal Mean
< 2 points	-.98
2 or 3 "	-.62
4 or 5 "	.19
*6 or 7 "	.94
8 or 9 "	1.48
10 or 11 "	1.70
> 11 "	1.76

* Assigned goal

Table 6

Attractiveness of Assigned Goal Level vs. Other Goal Levels
Hard Goal Condition-Trial 1
n=127

Attractiveness of scoring	Moderate Goal Mean
< 2 points	-1.18
2 or 3 "	-.68
4 or 5 "	.05
6 or 7 "	.76
*8 or 9 "	1.46
10 or 11 "	1.80
> 11 "	1.85

* Assigned goal

The response scale ranged from extremely attractive [2] to extremely unattractive [-2].

However, subjects did not perceive the assigned goal level more attractive than higher goal levels. The problem with this hypothesis is that support for this hypothesis does not necessarily mean that goal assignment has affected the valence of goals. Subjects may simply prefer harder goals. A better test would be to compare the attractiveness of the 6 or 7 goal in the moderate and hard goal conditions. If goal assignment is having an effect, the moderate goal subjects should perceive 6 or 7 to be more attractive than the hard goal subjects. The mean attractiveness of the 6 or 7 goal in the hard goal condition is significantly lower ($\underline{t}$ = 1.77, p = .04) than the mean score in the moderate goal condition which supports the hypothesis that goal assignment affects goal valence.

H1B: The summed valence of reaching each of all possible goal levels will be higher in the moderate goal condition than in the hard goal condition (Garland, 1985).

Garland's summed valence measure was calculated as: Sum Valence = Σ CVi; where i ranges from 1 to 11 and CV equals the cumulative valence of scoring 1 or more ringers, 2 or more ringers, etc. The mean summed valence for the moderate goal condition equals 8.6 (s.d.= 8.9). The mean summed valence for the hard goal condition equals 6.97 (s.d. = 9.23). The summed valences are significantly different ($\underline{t}$ = 1.39, p < .10) in the direction hypothesized by Garland.

H2: Subjects in the hard goal condition will assign a higher subjective probability to achieving a given goal level than the subjective probability assigned to the same goal level by subjects in the moderate goal condition. (Garland, 1985).

To test Hypothesis 2 one can subtract the average subjective probability of achieving any given goal level in the hard goal condition from the average subjective probability of achieving the same goal level in the moderate goal level. If Hypothesis 2 is correct, the differences should be negative. Instead, as can be seen from Tables 7 and 8, the signs of the differences are positive (a sign test indicates that the number of positive differences is greater than would be expected from chance [$p < .05$]). While there is a significant difference, it is in the opposite direction predicted by Garland. Another way to test Hypothesis 2 is to compare the mean summed probability (or self-efficacy) score for the moderate and hard goal conditions. Garland's hypothesis would predict the self-efficacy score to be higher in the hard goal condition. Actually, the average self-efficacy score was 5.7 (s.d. = 2.5) in the moderate goal condition, and 5.4 (s.d. = 2.5) in the hard goal condition. While the difference is not statistically significant, it is interesting to note that the higher score is in the moderate goal condition--opposite the direction predicted by Garland.

Table 7

Simple Subjective Probabilities-Moderate vs. Hard Goal Condition
Trial 2

Probability of scoring	Moderate Goal Mean	(S.d.)	Hard Goal Mean	(S.d.)	Sign of MG-HG
< 2 points	.76	(.36)	.78	(.33)	-
2 or 3 "	.78	(.28)	.78	(.22)	0
4 or 5 "	.67	(.29)	.65	(.29)	+
6 or 7 "	.53	(.31)	.51	(.29)	+
8 or 9 "	.42	(.32)	.39	(.29)	+
10 or 11 "	.30	(.30)	.26	(.28)	+
> 11 "	.22	(.28)	.20	(.27)	+

Table 8

Cumulative Probabilities-Moderate vs. Hard Goals
Trial 2

Probability of scoring	Moderate Goal Mean	(S.d.)	Hard Goal Mean	(S.d.)	Sign of MG-HG
1 or > points	.85	(.29)	.81	(.33)	+
2 "	.81	(.29)	.76	(.34)	+
3 "	.77	(.29)	.70	(.34)	+
4 "	.69	(.30)	.64	(.33)	+
5 "	.62	(.30)	.56	(.32)	+
6 "	.55	(.30)	.49	(.31)	+
7 "	.43	(.31)	.42	(.30)	+
8 "	.35	(.30)	.35	(.30)	+
9 "	.29	(.29)	.28	(.28)	+
10 "	.19	(.25)	.20	(.25)	+
11 "	.14	(.23)	.13	(.22)	+

Tests of the Linkage between Goal Choice and Individual Goals

The third hypothesis tests the ability of the expectancy choice portion of the model to predict individual goals.

H3: If faced with a choice among goal levels, then the individual will choose the goal level with the highest expected value.

To test this hypothesis the expected value of each goal level was compared with the expected value of all other goal levels for each individual. The goal level with the highest expected value was the individual's predicted goal level. The predicted goal level was then compared to the stated goal level by examining the correlation between the predicted goal and the individual's stated goal (a within-subject choice, but a between subjects design). The expected value of a goal level was measured as the attractiveness of that goal level (see Chapter 2, valence measures).

For Trial 1 the mean predicted effort level was 2.4 (s.d. = 1.1) while the mean stated effort level goal was 3.2 (s.d. = .62) (1=walk slowly, 2=walk normally, 3=jog, and 4=run). The correlation between the predicted and stated goal level was .39 ($p < .01$). For Trial 2 the mean predicted effort level was 2.1 (s.d. = 1.1) while the mean stated effort level goal was 3.1 (s.d. = .73) and the

correlation was .37 ($p < .01$). The significant correlations support Hypothesis 3.

In Trial 1 the mean predicted performance goal was 6.4 points (s.d. = 2.9) while the stated individual performance goal level was 7.0 points (s.d. = 2.4). The correlation between predicted and stated goal level is .52 ($p < .01$). In Trial 2 the mean predicted performance goal was 6.1 points (s.d. = 3.3) while the stated individual performance goal level was 7.0 (s.d. = 2.8) points. The correlation between predicted and stated goal level is .45 ($p < .01$). Again, the significant correlations support Hypothesis 3. Although the model does not predict the absolute goal value very well, it does predict the rank ordering of goal level among people.

Tests of the Linkage between Expected Value, Goal Acceptance, & Goal Commitment

H4: If the difference between an individual's goal and assigned goal decreases, then goal acceptance will increase.

H5: If the utility of a goal increases, then commitment toward the goal will increase.

H6: If commitment to a goal increases, then effort toward the goal will increase.

Tables 9 and 10 contain the correlations between the difference in individual goals (IG) and assigned goals (AG), the various questionnaire measures of goal acceptance/ commitment, motivational force score, and effort. The

motivational force score (MFS) was the individual's anticipated satisfaction with achieving his or her individual point goal. Hypothesis 4 indicates that the IG minus AG measure should be negatively correlated with the goal acceptance measure. As Table 9 shows in Trial 1 the correlation was -.28 ($p < .01$) and in Trial 2 (Table 10) the correlation was -.40 ($p < .01$). The significant correlations support Hypothesis 4.

For Hypothesis 5 to be supported MFS should be positively correlated with positive goal commitment and negatively correlated with negative goal commitment. In fact MFS was significantly correlated with negative goal commitment in Trial 1 ($r = -.16$, $p < .05$), however, it was not significantly correlated with the questionnaire measure labeled positive goal commitment. MFS was significantly correlated with goal acceptance. The reason MFS was significantly correlated with goal acceptance and not significantly correlated with positive goal commitment may that, as was noted in Chapter 3, the empirical measures of goal acceptance and goal commitment do not capture the difference in the constructs conceptualized in Chapter 2.

In Trial 2 MFS was significantly correlated with both goal acceptance and positive goal commitment, and significantly negatively correlated with negative goal commitment (see Table 10). Overall the results support Hypothesis 5.

Hypothesis 6 tests the linkage between goal commitment and effort. In Trial 1 effort was not significantly correlated with either the positive or negative goal commitment measures (see Table 9). In Trial 2 effort was negatively correlated with the negative goal commitment measure, but was not significantly correlated with the positive goal commitment measure (see Table 10). Not only should effort be correlated with the goal acceptance/goal commitment measures, but, because motivational force is hypothesized to be the determinant of goal commitment, effort should have also been positively correlated with MFS. As can be seen from Tables 9 and 10 MFS was significantly correlated with effort ($p < .05$). The results indicate mixed support for Hypothesis 6.

Tests of the Linkage between Goals and Effort

H7: If an individual's goal level increases, then effort will increase.

Tables 11 and 12 contains the correlations among predicted goals, stated goals, assigned goals and effort for the two trials. According to the arguments presented in Chapter 2, the strongest correlation should be between the individual's stated goal and effort. The correlation between predicted goals and effort should be somewhat lower because of the additional error introduced by predicting (rather than directly measuring) the individual's goal. The correlation between assigned goals and effort should be the lowest of the three because goal assignment is hypothesized

to affect effort only through its effect on individual goals. As can be seen from Tables 11 and 12, the only correlation not significant ($p < .05$) is between effort and assigned goals during Trial 1. Overall the results support Hypothesis 7.

Tests of the Unified Model vs. Other Models.

Hypotheses 8-13 were tested using hierarchical multiple regression analysis. Tables 13, 14, 15, and 16 present the result of these analysis. The column headed change in R^2 is the increase in R^2 resulting from the addition of that variable to the model. Significance levels for the increase in R^2 were calculated according to Kerlinger, (1986). In each analysis ability (the subject's pre-test performance score) and sex were used as covariates.

> **H8:** Adding goal commitment to a model that contains an individual's goal (predicted on a within-subject basis using the expectancy choice model), will significantly improve the predictive ability of the model.

Hypothesis 8 tests the unified model against the traditional goal choice model. Support for this hypothesis indicates support for the unified theory. Because of the high correlation among the three questionnaire measures of goal acceptance and goal commitment, only the first factor produced by the factor analysis (previously labeled goal acceptance) was used to test hypotheses involving goal acceptance or goal commitment.

The addition of goal acceptance did not improve the effort model in Trial 1 (see Table 13), but did significantly improve prediction in Trial 2 (see Table 14). The same results were obtained when performance was used as the dependent variable; addition of goal acceptance did not yield significant improvements in Trial 1 (see Table 15), but did yield significant improvements in Trial 2 (see Table 16). It may be that most subjects were highly committed to the assigned goal during the first trial, and that there was no significant variance in the degree of goal acceptance until the second trial when subjects were beginning to become tired of the exercise. During the first trial this was a novel, new game. By the second trial students were beginning to become physically tired, it was close to the end of the class, and they were ready to quit. As a result the intrinsic satisfaction, and therefore goal acceptance/goal commitment, should have been higher during the first trial than during the second trial.

> **H9:** Adding assigned goals to a model that contains goal commitment and an individual's goal will not improve the predictive ability of the model.

Hypothesis 9 tests the unified model against the traditional goal setting model. Support of Hypothesis 9 supports the unified theory, rejection of Hypothesis 9 supports the traditional goal setting model.

Table 9

Correlations between Acceptance, Commitment, MFS, & Effort Trial 1, n = 250

	r					
	1	2	3	4	5	6
1. IG - AG	1.00					
2. Goal Accept.	-.28**	1.00				
3. Pos. Com.	-.08	.34**	1.00			
4. Neg. Com.	.31**	-.63**	-.31**	1.00		
5. MFS	-.32**	.28**	.02	-.16*	1.00	
6. Effort	-.32**	.17**	-.01	-.01	.14*	1.00

* p < .05
** = p < .01
I.G. = individual's goal
A.G. = assigned goal
Pos. Com. = postive goal commitment
Neg. Com. = negative goal commitment
MFS = motivational force score

Table 10

Correlations between Acceptance, Commitment, MFS, & Effort Trial 2, n = 225

	r					
	1	2	3	4	5	6
1. IG - AG	1.00					
2. Goal Accept.	-.40**	1.00				
3. Pos. Com.	-.25**	.44**	1.00			
4. Neg. Com.	.36**	-.62**	-.29**	1.00		
5. MFS	-.34**	.39**	.20**	-.26**	1.00	
6. Effort	-.26**	.28**	-.14	-.29**	.21**	1.00

* < .05
** < .01
I.G. = individual's goal
A.G. = assigned goal
Pos. Com. = postive goal commitment
Neg. Com. = negative goal commitment
MFS = motivational force score

Table 11

Correlation between Goals & Effort
Trial 1, n = 250

	r			
	1	2	3	4
1. Predicted Goal	1.00			
2. Stated Goal	.52**	1.00		
3. Assigned Goal	.08	.22**	1.00	
4. Effort	.23**	.40**	.08	1.00

** p < .01

Table 12

Correlation between Goals & Effort
Trial 2, n = 250

	r			
	1	2	3	4
1. Predicted Goal	1.00			
2. Stated Goal	.45**	1.00		
3. Assigned Goal	.12	.20**	1.00	
4. Effort	.19**	.35**	.15*	1.00

* p < .05
** p < .01

Hypothesis 9 was supported in every instance except one; adding assigned goals to the effort model in Trial 1 resulted in a significant increase in the predictive power of the model.

> **H10:** Adding the motivational force of high performance to a model that contains an individual's goal and goal commitment will not significantly improve the model's predictive ability.

Hypothesis 10 tests the unified theory against the traditional expectancy force model. Support of this hypothesis supports the unified theory, rejection of this hypothesis supports the traditional force model. Hypothesis 10 was supported in both trials for both the effort and performance models.

> **H11:** Adding the slope of the utility curve to a model that contains an individual's goal and goal commitment will not significantly increase the model's predictive ability.

Hypothesis 11 tests the unified theory against the alternative formulations which use slope (return on effort) (Kennedy et al., 1983; Kopelman, et al., 1978). The results support the unified model because the addition of slope was not significant in Trials 1 or 2 for either the effort or the performance model.

H12: Adding self-efficacy to a model which contains an individual's goal and goal commitment will not increase the model's predictive ability.

H13: Adding summed valence to a model that contains an individual's goal and goal commitment will not increase the model's predictive ability.

Hypothesis 12 tests the unified model against models which use self-efficacy and Hypothesis 13 against models which use summed valence measures (i.e. Locke et al., 1986; Garland, 1985). The tests of Hypothesis 12 support the unified theory because the addition of neither self-efficacy nor summed valence resulted in a significant increase in R^2 for the effort or performance models during Trials 1 or 2.

Overall, the hierarchical regression analysis supports the unified model with two exceptions. First, during Trial 1 goal commitment did not significantly increase the explanatory power of the model, and assigned goals did increase the explanatory power of the model. This indicates that the assigned goal was having an effect on effort other than through its effect on individual goals or goal commitment, a result inconsistent with the unified model. In Trial 2, however, goal commitment did significantly improve the model and assigned goal did not significantly improve the model. It may be that motivational differences did not become apparent until the subjects were becoming tired.

Table 13

Tests of the Unified Model Against other Models; Effort Regression Models-Trial 1 (n = 178)

	R^2	Change in R^2	F
H8: overall model	.38		32.8***
sex	.27	.27	59.61***
ability	.36	.09	24.47***
individual goal	.38	.02	4.11**
goal acceptance	.38	.00	.00
H9: assigned goal	.40	.02	5.62**
H10: motivatinal force	.38	.00	.00
H11: slope	.38	.00	.00
H12: summed valence	.38	.00	.00
H13: self-efficacy	.38	.00	.00
reward	.45	.07	22.74***

** p < .05
*** p < .01

Table 14

Tests of the Unified Model Against other Models; Effort Regression Models-Trial 2 (n = 143)

	R^2	Change in R^2	F
H8: overall model	.23		8.40***
sex	.15	.15	24.28***
goal acceptance	.21	.06	11.55***
individual goal	.23	.02	3.75**
ability	.23	.00	.00
H9: assigned goal	.23	.00	.00
H10: motivational force	.23	.00	.00
H11: slope	.23	.00	.00
H12: summed valence	.24	.01	1.35
H13: self-efficacy	.23	.00	.00
reward	.30	.07	12.60***

** p < .05
*** p < .01

Table 15

Tests of the Unified Model Against other Models; Performance Regression Models-Trial 1 (n = 166)

	R^2	Change in R^2	F
H8: overall mode l	.47		24.19***
ability	.40	.40	107.60***
sex	.46	.06	18.94***
effort	.47	.01	5.23**
individual goal	.47	.00	.00
goal commitment	.47	.00	.00
H9: assigned goal	.48	.01	.78
H10: motivational force	.48	.01	.78
H11: slope	.47	.00	.00
H12: summed valence	.48	.01	.78
H13: self-efficacy	.48	.01	.78
reward	.48	.01	.78

** p < .05
*** p < .01

Table 16

Tests of the Unified Model Against other Models; Performance Regression Models-Trial 2 (n = 143)

	R^2	Change in R^2	F
H8: overall model	.50		24.19***
individual goal	.34	.34	74.18***
ability	.43	.09	20.47***
goal acceptance	.46	.03	9.33***
sex	.49	.03	9.33***
effort	.50	.01	2.12
H9: assigned goal	.50	.00	.00
H10: motivational force	.50	.00	.00
H11: slope	.51	.01	2.72
H12: summed valence	.51	.01	2.72
H13: self-efficacy	.50	.00	.00
reward	.51	.01	2.72

** p < .05
*** p < .01

In the performance models the addition of the individual's stated goal and goal commitment should not have been significant because the effect of goals and goal commitment should be on effort and effort was already in the model. This was true for Trial 1, but was not true for Trial 2. In Trial 2 goal commitment and individual goals were both significant predictors of performance.

One could speculate that during the experiment subjects concluded that the primary determinant of performance was not the number of ringers tossed (the measure of effort used in this study), but concentration. If so, goal commitment and goal level may have been affecting other types of effort, such as mental concentration, not measured in this study.

Chapter 5

Conclusions

Goal Assignment and Expectancies/Valences Linkage

This study was conducted, in part, because of the belief that the empirical success of goal setting researchers had led them dangerously close to assuming a direct relationship between assigned goals and performance. The danger in this line of reasoning is that it oversimplifies the task of performance motivation. If one believes individuals generally accept any type and level of performance goal, there is no need to be concerned with whether the assigned goal level is reasonable or not. In fact, one could conclude that the best policy would be to assign as difficult a goal as possible, even if it is unattainable (which is the conclusion reached by Garland, 1983). Furthermore, there is no reason to be concerned with whether individuals find accomplishment of the assigned goals intrinsically or extrinsically satisfying. There is no reason to study reward systems or the motivational aspects of leadership.

In contrast to the view that assigned goals are the primary explanation of differences in performance, the theory proposed in this study argues that motivational differences in performance are due to either 1) difference in individual goals, or 2) differences in the amount of effort individuals are willing to exert toward a goal.

It further proposes that the reason individuals have the performance goal is because they have chosen to attempt a particular goal level, and that the reason they have chosen to attempt that performance level, and not others, is because the consequences of attempting to perform at that performance goal level are more favorable than the consequences of performing at any other performance level. The theory also recognizes that individuals with the same goal may differ in the intensity or persistence of effort exerted to accomplish the goal because of differences in the magnitude of the expected value of goal accomplishment.

If this theory is correct, assigning difficult goals may or may not increase performance. If the assigned goal level has a lower expected value than some other goal level then the individual should not accept the assigned goal. Even if the individual accepts the assigned goal, if the expected value of accomplishing the goal is low, motivation toward the goal should be low, the individual should not be very committed to the goal, and the individual should be unwilling to engage in difficult or prolonged effort to reach the goal. Assigned goals would be only one of many possible variables which could affect the value of reaching a given goal level, and the only time assigning goals should affect performance is when the act of assigning goals affects the expected value of performing at various levels.

Because both the expectancy choice model and the expectancy force model rely on probabilities and valences to

determine expected value, the only way goal assignment could affect goal choice, or motivation toward a goal, would be to affect probability estimates or valences. The significant support for Hypothesis 1A and Hypothesis 1B provides evidence for the proposed linkage between goal assignment and expectancies/valences. Individuals perceived goals lower than the assigned goal to be less attractive than the assigned or higher goal levels.

Although the analysis of the effect of goal assignment on valences leads one to conclude that assigning difficult goals has a positive effect by making high goal levels more attractive than lower goal levels, the affect of goal assignment on probabilities provides evidence that assigning difficult goals may also have negative effects. Subjects in the moderate goal condition systematically perceived their probability of achieving each of the various goal levels to be higher than did subjects in the hard goal level, the opposite of the hypothesized effect. The original hypothesis was based on Garland's (1985) reasoning that subjects assigned difficult goals would interpret the assignment as an indication that they were capable of achieving difficult goals and, therefore, would have higher probability estimates. What actually seems to be happening is that subjects are forming probability estimates based on the expected probability of achieving the assigned goal. If they do not believe it very likely they will be able to achieve the assigned goal, as happened in the hard goal

condition, they lose confidence not only in their ability to reach the assigned goal but other goals as well; an overall decrease in self-confidence or self-efficacy.

This does not necessarily mean that the decrease in self-confidence will result in lower effort or performance. If higher goal levels have higher valences than lower goal levels, the expected value of difficult goals may still be greater than the expected value of lower goal levels. If so, even though the probability of success is lower, the individual would still choose the higher goal and would exert more effort. In this study, for example, even though subjects in the hard goal condition had lower probabilities, they still had a mean individual goal of 7.5 points (s.d. = 2.9) compared to the moderate goal group's mean individual goal of 6.58 points (s.d. = 2.5).

It does mean, however, that subjects in the hard goal condition would have lower motivational force scores and would be less committed to achieving the goal. If the inability to achieve an assigned goal does result in an overall decrease in self-efficacy, self-confidence, or self-esteem further longitudinal studies are needed before implementing Garland's (1985) recommendation that impossible goals be assigned.

The evidence this study provides that goal assignment has it effect, and is moderated by, probabilities and valences, is important because it supports the belief that goal acceptance and goal commitment should not be taken for

granted, but should be studied as important motivational constructs. While it provides some evidence as to how goal assignment affects motivation, many important questions remain to be answered by future research. When do assigned goals improve performance and when do they not? Is it possible that some assigned goals actually hurt performance? If so, under what conditions? How and why does goal assignment affect the probabilities and valences? Are some people who assign goals better at getting goal acceptance and goal commitment than others? If so, what do they do different?

Linkage between Expected Value and Goal Choice

The next step in the causal chain proposed by the unified model is that expectancies and valences should affect effort through their effect on goal choice and motivational force. Even though the correlation is only .52 or .45 between predicted goals and stated goals, it should be noted that the correlation between the individuals stated goal and effort was only .40. It does raise questions about why an individual would indicate that they find goal A more attractive than goal B, but then choose goal B. One possibility is that when subjects are asked the attractiveness of a performance goal, the reported attractiveness does not reflect the positive or negative value of the effort level required to achieve the goal. If so, a model such as Evan's might produce higher correlations. Nevertheless, it does support the belief that

individuals choose the performance level they will attempt, and that, if one knows something about the perceived consequences or expected value the individual associates with various goal levels it is possible to predict the goal they will choose. If one wants individuals to choose high performance goals, then the expected payoff for high performance has to be higher than the expected payoff for low performance. In terms of management practice, managers should try to persuade those they manage that performing at a high level is more intrinsically satisfying than performing at lower levels. Formal evaluation and reward systems should be designed in ways that reward high performance more than low performance.

While it is clear that high performance should be more rewarding than low performance it is not clear exactly how this condition should be created. One strategy would be to assign very difficult goals, tell people it is acceptable to try and fail, reward goal accomplishment, and ignore goal failure. On the other hand, another way to create a difference between high and low goals would be to assign a difficult goal, then punish people for performing at levels lower than the assigned levels. All three types of strategies are observed in practice, but expectancy theory makes no predictions as to which of the three strategies is better than the others, and, there have been no attempt to determine empirically which strategy is most effective. Consequently, further research is needed in this area.

Linkage between Expected Value, Goal Acceptance and Goal Commitment

Tests of the correlation between the expected value of the individual's goal, various goal commitment/acceptance measures, and effort were generally significant. Because of the problems with the goal commitment/goal acceptance measures, if a distinction is to be made between goal acceptance and goal commitment, goal commitment (like expected value) is going to have to be measured with respect to a specific referent. Instead of asking individuals how committed they are, the better approach would be to ask how committed they are to a specific goal level.

Perhaps the most important contribution of this study was the theoretical and empirical distinction between effort variance attributable to goal variance, and the effort variance within a goal group attributable to variation in the motivational force toward the goal. While motivation theorist have recognized the importance of creating payoff differentials between high and low performance for some time, and subsequently have developed pay systems such as bonus pay systems or piece-rate systems, the implications of a "magnitude effect" does not seem to have received sufficient attention. It may be that when differential pay systems don't work, one of the major reasons is that even though there is a pay differential between high and low performance, the magnitude of the expected payoff is so low, that the motivational force is too weak to have a

significant impact on effort and performance. It is not uncommon to hear of piece-rate systems, particularly, that do not work. In some cases workers find it more attractive to work at the minimum wage rate than to attempt the higher performance levels required to benefit from the piece rate. It may be that the piece rate is so low, the workers are not motivated by it.

The relationship between goal acceptance/goal commitment and effort was stronger in the second trial than in the first trial. By the time the students participated in the second trial they were physically tired, it was the end of the class period, and they were ready to quit. As a result, differences in goal commitment were more pronounced during the second trial. This illustrates the importance of recognizing that motivation is a multidimensional construct involving not only direction and intensity, but persistence as well. In this case, by the time of the second trial many of the students were no longer willing to exert effort. If only one trial had been conducted, the persistance effect would not have been detected. It also indicates a possible problem with relying exclusively on goal assignment to motivate people. While assigning goals may be one way of initiating action, other types of motivation techniques, such as extrinsic rewards, may be necessary to sustain action.

While extrinsic rewards are important determinate of goal commitment and goal acceptance, investigating the way

in which intrinsic motivation can be used to increase goal acceptance/goal commitment seems to be an important area for future research. If the act of assigning goals is enough to change peoples intrinsic satisfaction with reaching certain goals, it may be that other managerial actions, such as persuading people of the value of accomplishing a certain goal level, are also able to produce substantial changes in intrinsic satisfaction. In fact, it may be that the ability to change individuals intrinsic satisfaction with performing at various levels is one of the primary attributes of what is sometimes called "charismatic leadership."

Linkage between Goals and Effort

As is the case in most goal setting studies, a significant correlation was obtained between assigned goals and effort. It is interesting to note that in this study the strongest correlation was between the individual's stated goal and effort, and the correlation between the predicted goal and effort was stronger than the correlation between the assigned goal and effort. One other point is that while low correlations between predicted goals and effort are sometimes cited as an indication of problems with expectancy type models, the correlations between stated goals (both stated effort goals and stated performance goals) and effort were not very high either. The fact that the correlations were low, however, does not necessarily indicate a problem with the theory. It may be that individuals with higher goals were trying harder along some

dimension not measured as effort in this study. In this study effort was measured as the distance traveled during the trial, but some individuals may not have tried hard by running faster, but by running slower and concentrating longer on each toss.

The Unified Model vs. Other Models

In general the results supported the unified model. The unified theory was consistently highly significant in the predicted direction. Also, the marginal *F* test indicated that the addition of the unified model constructs was significant even when variables from other models (such as assigned goals) were already in the model. However, constructs from other models were not significant when they were added to the unified model. One exception was the addition of assigned goals in Trial 1. In Trial 1 the marginal test of goal commitment was not significant, but the marginal test of assigned goals was significant. In Trial 2 the exact opposite occurred. The most reasonable explanation seems to be that, as was discussed earlier, motivational force (or commitment) did not become important until subjects began to tire somewhat.

Another interesting conclusion is that sex was the most significant variable. On average females traveled 716 ft. during the two minute period (s.d. = 82 ft.) while men traveled 871 ft. (s.d. = 104 ft.). Even when ability differences were accounted for (by using pretest performance as a covariate) men exerted more effort than women. A

review of the probabilities, valences, and goal commitment measurements did not indicate any significant difference between men and women. It may be that there were ability differences which the ability measure used here did not adequately capture, or there may differences in the way men and women react to goal assignment. The data do not allow a clear answer, but it would seem to be a promising area for future research. It may be that the act of assigning difficult goals affects women differently than men. At the moment there is no theory which would explain how or why that would be true.

Finally, in spite of the fact that both effort and ability were already in the model, in Trial 2 the addition of various measures such as goal commitment and goal valence were still significant. The most logical explanation would seem to be that motivation was affecting concentration, not just effort.

Contributions and Limitations

The major premise of this study was that the goal-setting, goal-choice, and goal-force models were not contradictory, but complementary. In general, this conclusion seems to be supported. The results indicate that not only does high performance have to be more attractive than low performance, the magnitude of the expected value of high performance has an independent effect on motivation and performance.

Also, the study makes a methodological contribution by clarifying the relationship between goal acceptance and goal commitment, and by providing a technique for using a between subjects design for testing expectancy theory models.

At the same time several caveats are in order. The first is that the subjects in the sample were college students. Even though most of the students worked at least part time, it is not clear that student behavior on two minute trials will generalize to other populations. The generalizability of laboratory studies that use students has been questioned in some areas of research, and it has been suggested that researchers should be required to demonstrate that in his or her area of research the results obtained in the laboratory using students are generalizable (Gordon, Slade, & Schmitt, 1986). Latham & Lee (1985), after comparing field and laboratory studies of goal setting (most of which used students and game-like tasks), concluded that in goal setting research laboratory studies that use students are generalizable, validating the use of lab studies and students in this area of research. Despite a call for laboratory tests of expectancy theory (i.e. Dachler & Mobley, 1973), most expectancy theory studies have been field studies, and it is not clear if lab studies will generalize or not.

Another reason the generalizability of the study might be questioned is the use of a "game" instead of a "work" type task. The use of games to test organizational behavior

theories has a long and varied tradition (Weick, 1965). While games may appear to be artificial and lack the realism of a work task, what may be more important than realism is what Zelditch & Evan (1962) have called the "rule of genotypic similarity." This rule states that "the properties of a simulate need not look like the properties they represent; what is required is that they obey the same laws" (Weick, 1965). In a similar vein, Zigler (1963) concludes that tests of a theory seldom require a natural-appearing situation. He reasons that if the principles contained in a theory are relevant to one world (such as the workplace) they should be relevant to other worlds (such as laboratories) as well. The critical question is not the correspondence between the appearance of the lab task and the appearance of real world task, but the correspondence between the task and the theory (Weick, 1965). Differences between real world subjects and laboratory subjects, or between real world tasks and laboratory tasks are not important unless one has some reason to believe that some specific attribute of the subject or some attribute of the task systematically correlate with the effect being studied (Zelditch & Evan, 1962; Weick, 1967). Finally, while it is probably true that the use of students and games limits the external validity or generalizability of a study, almost any task, whether a game or not, can be criticized on the same basis. A simple clerical task may bear little resemblance to most managerial or professional tasks.

While the results were encouraging, important problems remain. It is still not clear how difficult a goal individuals should be assigned or encouraged to set. Also, better between subjects valence measures are needed. Even though there were significant differences in effort between the reward and no-reward conditions, there were no statistically significant differences in reported attractiveness of goals. One conclusion is that the subjects were using different anchors when responding to the question. Also, the A, not A measures did not work. Subjects did not know what "not A" was. Does "not A" refer to goals higher than the assigned goal, or lower than the assigned goal, or both? A possible solution is to change the question so it asks about the valence of performing at goal level "i" or higher, and the valence of performing at goal level "i" or lower.

Finally, it is not clear what the precise formulation is for predicting goal valence. Many different equations have been proposed under the label "expectancy theory," and it is not clear which formulation, if any, actually captures the valences used by subjects when making performance decisions.

In terms of the implications for managers, it seems clear that both goal level and goal commitment are important. If it is possible to get significant variance in effort toward a goal using a game, college students, and two minute trials, the variance among employees is probably much

higher. The basic recommendation would be to make high performance more attractive than low performance, and to make the magnitude of the attractiveness large enough to gain goal commitment.

Even so, several important questions remain. One is, "When it comes to rewards, how large is large enough?" Another is, "How difficult is difficult enough, and how difficult is too difficult?" In this study, as in most studies, the subjects performed better when difficult goals were assigned, even though the objective probability of achieving the assigned goal was very low. Nevertheless, it seems unwise to recommend that managers assign unachievable goals at this time. In lab studies the consequences of not achieving a goal are not very substantial. In real work situations the consequences for not achieving a goal are often very substantial. It may well be that this results in a very different reaction to the assignment of difficult goals.

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APPENDIX A
RING TOSS QUESTIONNAIRE

RING-TOSS QUESTIONNAIRE

Name:_____ S.S.#_____

| PLEASE ANSWER EACH OF THE QUESTIONS BELOW BY MARKING THE NUMBER OR LETTER |
| Of THE DESCRIPTION WHICH BEST FITS YOU OR BY WRITING IN THE CORRECT ANSWER. |

1. What goal were you assigned for the next period?

   a. To score 4 points
   b. To score 6 points
   c. To score 9 points
   d. To score 11 points
   e. Something else _____

2. What is your personal goal for the next period?

   a. To score 1 or 2 points
   b. To score 2 or 3 points
   c. To score 4 or 5 points
   d. To score 6 or 7 points
   e. To score 8 or 9 points
   f. To score 10 or 11 points
   g. To score more than 11 points
   h. To do your best
   i. Something else _____

2. How would you describe this game?

```
   Unpleasant 0-----1-----2-----3-----4-----5-----6-----7 Pleasant
        Dull  0-----1-----2-----3-----4-----5-----6-----7 Exciting
  Significant 0-----1-----2-----3-----4-----5-----6-----7 Pointless
  Challenging 0-----1-----2-----3-----4-----5-----6-----7 Trivial
      Boring  0-----1-----2-----3-----4-----5-----6-----7 Interesting
   Satisfying 0-----1-----2-----3-----4-----5-----6-----7 Unsatisfying
     Tedious  0-----1-----2-----3-----4-----5-----6-----7 Fun
```

3. How hard will you honestly try to achieve your personal goal?

```
    1-----2-----3-----4-----5-----6----7-----8-----9-----10-----11-----12
 not at                          average                          very
all hard                                                          hard
```

4. How enthusiastic are you about attempting to achieve your personal goal?

```
    1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
  very                           average                          very
enthusiastic                                                  unenthusiastic
```

5. Acceptance of a goal means assuming the assigned goal as your own personal goal. To what extent to you accept the assigned goal for this game?

```
    1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
 I do not                        neutral                     I fully accept
  accept                                                       the goal
```

6. Commitment to a goal means the determination and persistence to achieve a goal. To what extent are you committed to the your goal?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
very committed — neutral — not at all committed

7. In your opinion, how reasonable was the goal you were asked to work for?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
very unreasonable — neutral — very reasonable

8. How determined are you to reach your performance goal?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
very determined — neutral — not at all determined

9. Of the maximum effort (100%) you could exert in pursuit of your goal, what percentage do you think you will exert?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
0% — 50% — 100%

10. How difficult to you think it will be to achieve the performance goal you were assigned?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
very easy — moderately difficult — very difficult

11. To what extent will you strive to attain the your goal?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
will not strive — somewhat strive — will strive

12. To what extent do you honestly accept the performance goal determined for you on this task?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
do not accept — somewhat accept — completely accept

13. How satisfied were you with your performance during the last period?

1-----2-----3-----4-----5-----6-----7-----8-----9-----10-----11-----12
very satisfied — neutral — very dissatisfied

14. How interesting is this game?

[1] very interesting
[2] somewhat interesting
[3] average
[4] somewhat uninteresting
[5] very uninteresting

15. How difficult is this game?

[1] very difficult
[2] somewhat difficult
[3] average
[4] somewhat easy
[5] very easy

16. How challenging do you find this game?

[1] very challenging
[2] somewhat challenging
[3] average
[4] somewhat unchallenging
[5] very unchallenging

17. How enjoyable do you find this game?

[1] very enjoyable
[2] somewhat enjoyable
[3] average
[4] somewhat unenjoyable
[5] very unenjoyable

| INDICATE THE EXTENT TO WHICH YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS |

	Strongly agree	Agree	Disagree	Strongly Disagree
1. I am strongly committed to pursuing my goal in this game.....	[1]	[2]	[3]	[4]
4. There's not much to be gained by trying to achieve this goal.	[1]	[2]	[3]	[4]
2. I am willing to put forth a great deal of effort beyond what I would normally do to achieve this goal.....	[1]	[2]	[3]	[4]
5. It is quite possible that this goal needs to be changed.....	[1]	[2]	[3]	[4]
3. Quite frankly, I don't care if I achieve this goal or not....	[1]	[2]	[3]	[4]
7. It's unrealistic for me to expect to reach this goal.....	[1]	[2]	[3]	[4]
6. It wouldn't take long for me to abandon this goal.....	[1]	[2]	[3]	[4]
8. Since it's hard to tell how hard a goal is until you've played a game for awhile, it's hard for me to take this goal seriously.....	[1]	[2]	[3]	[4]
9. I think this goal is a good goal to shoot for.....	[1]	[2]	[3]	[4]
10. Performance on this game is primarily due to luck.....	[1]	[2]	[3]	[4]
11. Performance on this game is primarily due to effort.....	[1]	[2]	[3]	[4]
12. Performance on this game is primarily due to the difficulty of the game.....	[1]	[2]	[3]	[4]
13. Performance on this game is primarily due to ability.....	[1]	[2]	[3]	[4]
14. Accomplishing this goal will give me a sense of achievement.	[1]	[2]	[3]	[4]

Subjective probabilities are numbers which indicate how likely it is that an event will occur. A probability can be any number between 0 and 1. If the probability is 0, there is no possibility that the event will occur. If the probability is 1, the event is certain to occur. For example, if you flip a coin, the probability of getting a head is 0.5

15. If you walk slowly during the next period, what is the probability that you will score:

less than 2 points	____ prob.
2 or 3 points	____ prob.
4 or 5 points	____ prob.
6 or 7 points	____ prob.
8 or 9 points	____ prob.
10 or 11 points	____ prob.
more than 11 points	____ prob.

16. If you walk at a normal pace, what is the probability that you will score:

less than 2 points	____ prob.
2 or 3 points	____ prob.
4 or 5 points	____ prob.
6 or 7 points	____ prob.
8 or 9 points	____ prob.
10 or 11 points	____ prob.
more than 11 points	____ prob.

17. If you jog what is the probability that you will score:

less than 2 points	____ prob.
2 or 3 points	____ prob.
4 or 5 points	____ prob.
6 or 7 points	____ prob.
8 or 9 points	____ prob.
10 or 11 points	____ prob.
more than 11 points	____ prob.

18. If you run what is the probability that you will score:

less than 2 points	____ prob.
2 or 3 points	____ prob.
4 or 5 points	____ prob.
6 or 7 points	____ prob.
8 or 9 points	____ prob.
10 or 11 points	____ prob.
more than 11 points	____ prob.

19. How attractive do you find the idea of:

	extremely attractive	somewhat attractive	somewhat unattractive	extremely unattractive
a. walking slowly	[1]	[2]	[3]	[4]
b. walking normally	[1]	[2]	[3]	[4]
c. jogging	[1]	[2]	[3]	[4]
d. running	[1]	[2]	[3]	[4]
e. scoring < 2 points	[1]	[2]	[3]	[4]
f. scoring 2 or 3 points	[1]	[2]	[3]	[4]
g. scoring 4 or 5 points	[1]	[2]	[3]	[4]
h. scoring 6 or 7 points	[1]	[2]	[3]	[4]
i. scoring 8 or 9 points	[1]	[2]	[3]	[4]
j. scoring 10 or 11 points	[1]	[2]	[3]	[4]
k. scoring more than 11	[1]	[2]	[3]	[4]

20. How satisfied will you be if you:	extremely satisfied	somewhat satisfied	somewhat dissatisfied	extremely dissatisfied
a. score < 2 points	[1]	[2]	[3]	[4]
b. do not score < 2 points	[1]	[2]	[3]	[4]
c. score 2 or 3 points	[1]	[2]	[3]	[4]
d. do not score 2 or 3 points	[1]	[2]	[3]	[4]
e. score 4 or 5 points	[1]	[2]	[3]	[4]
f. do not score 4 or 5 points	[1]	[2]	[3]	[4]
g. score 6 or 7 points	[1]	[2]	[3]	[4]
h. do not score 6 or 7 points	[1]	[2]	[3]	[4]
i. score 8 or 9 points	[1]	[2]	[3]	[4]
j. do not score 8 or 9 points	[1]	[2]	[3]	[4]
k. score 10 or 11 points	[1]	[2]	[3]	[4]
l. do not score 10 or 11 points	[1]	[2]	[3]	[4]
m. score more than 11	[1]	[2]	[3]	[4]
n. do not score more than 11	[1]	[2]	[3]	[4]

21. If you try to score 2 or less points, what is the probability that you:
    a. will score < 2 points ____ prob.
    b. will not score < 2 points ____ prob.

22. If you try to score 2 or 3 points, what is the probability that you:
    a. will score 2 or 3 points ____ prob.
    b. will not score 2 or 3 points ____ prob.

23. If you try to score 4 or 5 points, what is the probability that you:
    a. will score 4 or 5 points ____ prob.
    b. will not score 4 or 5 points ____ prob.

24. If you try to score 6 or 7 points, what is the probability that you:
    a. will score 6 or 7 points ____ prob.
    b. will not score 6 or 7 points ____ prob.

25. If you try to score 8 or 9 points, what is the probability that you:
    a. will score 8 or 9 points ____ prob.
    b. will not score 8 or 9 points ____ prob.

26. If you try to score 10 or 11 points, what is the probability that you:
    a. will score 10 or 11 points ____ prob.
    b. will not score 10 or 11 points ____ prob.

27. If you try to score more than 11 points, what is the probability that you:
    a. will score more than 11 points ____ prob.
    b. will not score more than 11 points ____ prob.

28. How satisfied will you if you score:	extremely satisfied	somewhat satisfied	somewhat dissatisfied	extremely dissatisfied
a. 1 or more points	[1]	[2]	[3]	[4]
b. 2 or more points	[1]	[2]	[3]	[4]
c. 3 or more points	[1]	[2]	[3]	[4]
d. 4 or more points	[1]	[2]	[3]	[4]
e. 5 or more points	[1]	[2]	[3]	[4]
f. 6 or more points	[1]	[2]	[3]	[4]
g. 7 or more points	[1]	[2]	[3]	[4]
h. 8 or more points	[1]	[2]	[3]	[4]
i. 9 or more points	[1]	[2]	[3]	[4]
j. 10 or more points	[1]	[2]	[3]	[4]
k. 11 or more points	[1]	[2]	[3]	[4]

29. What is the probability of scoring:

a. 1 or more points ____ prob.
b. 2 or more points ____ prob.
c. 3 or more points ____ prob.
d. 4 or more points ____ prob.
e. 5 or more points ____ prob.
f. 6 or more points ____ prob.
g. 7 or more points ____ prob.
h. 8 or more points ____ prob.
i. 9 or more points ____ prob.
m. 10 or more points ____ prob.
n. 11 or more points ____ prob.

30. How hard to you intend to work?

[1] run
[2] jog
[3] walk normally
[4] walk slowly

31. How many points do you intend to score?

_____ points.

32. How hard do you think your friends will work?

[1] run [2] jog [3] walk normally [4] walk slowly

33. How many points do you think your friends will try to score? ____ points.

34. How hard will your friends think you should work?

[1] run [2] jog [3] walk normally [4] walk slowly

35. How many points will your friends think you should try to score? ____ points.

36. Would you like to play this game again? [1] yes [2] no

37. If this game were for sale would you buy it? [1] yes [2] no

38. If your answer to question 37 was yes, how much would you be willing to pay for it? _____ dollars.

39. What was the primary determinate of how well you performed during the last period?

[1] Your own skill
[2] Luck
[3] Your knowledge of the game
[4] The strategy you used
[5] The amount of effort exerted
[6] The difficulty of the game
[7] Uncontrollable chance factors
[8] Your ability

40. If you played this game again, do you think your performance would:

[1] Improve greatly
[2] Improve somewhat
[3] Stay the same
[4] Be somewhat worse
[5] Be a lot worse

41. How attractive is the coupon prize?*

[1] Highly attractive
[2] Attractive
[3] Somewhat attractive
[4] Neither attractive nor unattractive
[5] Somewhat unattractive
[6] Unattractive
[7] Highly unattractive

42. How much would you pay for one package of coupons?* _____ dollars.

* Questions 41 and 42 were included only in the reward condition.

ABSTRACT

Different individuals, with the same ability and faced with the same environmental constraints, exert varying amounts of effort, and, to the extent that performance is a function of effort, achieve different levels of performance. This study proposes and tests a theory of motivation which is an integration of what have previously been considered separate, and often conflicting, theories of motivation. The study hypothesizes that motivational differences in effort or performance may be due to either differences in goal level or differences in goal commitment and tests the integrated model against a model which uses assigned goals to predict effort (goal setting theory), a model which uses the expected value of goals to predict goal choice, then uses goal choice to predict effort (expectancy theory choice model), and a model which uses the expected value of a goal to predict effort (expectancy theory motivational force model).

Two hundred fifty college students enrolled at Western Michigan University participated in a laboratory experiment using a 2x2x2 factorial design. The assigned goal level, the probability of success, and the valence of the outcomes of a ring-toss task were manipulated to assess their impact on effort and performance over two trials.

Results generally support the unified model. Both individual goals and goal commitment were significant predictors

of effort and performance, however goal commitment did not become significant until Trial 2. Apparently there was no difference in goal commitment until subjects began to tire. The results also show that goal assignment affects both probability and valence estimates. Also, predicted goals were significantly correlated with stated goals. Tests against alternative formulations demonstrated that the unified model was superior to the goal setting model, the expectancy choice model, and the expectancy force model.

The results of the study imply that the higher the individual's goal, the higher the performance, individuals will choose higher goals as long as higher goals have higher expected value than less difficult goals, and the higher the expected value of a goal the more committed an individual will be to the goal. Implications of the results for managers are discussed.